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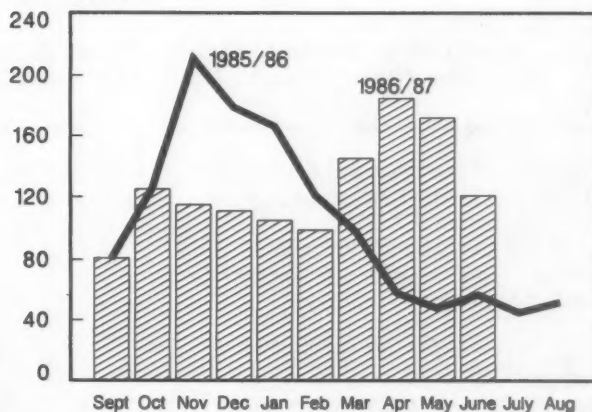
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# Feed

## Situation and Outlook Report

**Monthly U.S. Corn Exports**

Million bushels



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## SUMMARY

*This year's feed grain production* is estimated at 220 million metric tons, a drop of 32 million (13 percent) from last year. An estimated 87.5 million acres will be harvested this year, down about 14 percent from last year's 102 million acres. The decline is partly being offset by a record yield of 2.51 tons per acre, up a little over 1 percent from last year's yield. Both corn and sorghum yields will set records this year, barley yield will rise but not to a record, and oats yield is forecast down 2.1 bushels an acre from last year.

*Foreign coarse grain production* for 1987/88 is expected to rise 7 million tons (1 percent) to a second consecutive record. Major exporters are projected to increase production 840,000 tons, but this will be 4 million tons below 1985/86. Production in the major importing countries likely will be up nearly 4 million tons. The larger production, plus a 4-million-ton increase in carryover stocks, represents an overall gain of 11 million, for a record 650-million-ton foreign coarse grain supply for 1987/88. The foreign corn supply, 294 million tons, represents 45 percent of the foreign coarse grain supply for 1987/88.

*The domestic feed grain supply* for 1987/88 will total about 374 million tons, a drop of 5 million from 1986/87. Disappearance in 1986/87 is forecast at 226 million tons, up 20 million from 1985/86. Since the total supply for 1986/87 exceeded last year's by almost 47 million tons, carryover stocks will rise 27 million to a record 154 million tons. Thus, the increase in carryover stocks will offset most of this year's production decline.

*A strong third quarter* pulled total corn exports ahead of a year earlier. For the first 6 months of the 1986/87 marketing year, corn exports were down 247 million from the comparable period last year. However, during the March-May quarter, exports more than doubled from a year earlier, bringing the June 1 total 52 million above a year earlier. Exports for the year are expected to exceed 1.5 billion bushels, up about 280 million from 1985/86.

*Feed and residual disappearance* of corn is projected to exceed 4.6 billion bushels for

1986/87, 550 million above 1985/86 and 100 million above the previous record set in 1979/80. However, fewer grain-consuming animal units were on hand for 1986/87 than either last year or 1979/80. The high disappearance this year may represent in part a larger residual component.

*Generic certificates* have become a powerful marketing tool this year. From September to late July, more than 3.1 billion bushels of corn were redeemed from loans and Commodity Credit Corporation (CCC) inventory and returned to the market. Almost 95 percent of these redemptions have been from regular 9-month loans. The certificate exchanges have kept market use up and reduced the quantity of corn that would otherwise have been defaulted to CCC inventories.

*Projected record yields and carryover stocks* of corn will hold the total 1987/88 corn supply to within 100 million bushels of 1986/87's record 12.3 billion. Carryover stocks of corn are forecast at 4.9 billion bushels, up 900 million from last September. Corn will be harvested from about 59.6 million acres this year, 14 percent fewer than 1986. However, an estimated record yield of 121.4 bushels per acre will produce a crop of more than 7.2 billion bushels, 12 percent below 1986's 8.2 billion.

*A record supply of sorghum*, forecast at 1.5 billion bushels, will be available for 1987/88, but supplies of barley and oats will be down from last year. Record carryin stocks result in the large supply of sorghum, since production will be down 180 million bushels. For barley, carryover stocks were nearly the same as last year, but production is expected to be down about 100 million bushels.

*The 1987/88 supply of oats* is estimated at 561 million bushels, about 40 million below last year's supply and apparently the lowest on record. Carryin stocks are down about 50 million bushels, and the oats crop, estimated at 393 million bushels, will be up only 8 million.

*Hay supplies* of 183.2 million tons are estimated for 1987/88 (May-April), an increase of 1.2 million from last year's record. This year's hay crop, estimated at

150.8 million short tons, will be down 4.5 million, but carryover stocks of 32.4 million are up 5.7 million.

*The demand for feeds* is expected to be somewhat higher in 1987/88 than a year earlier, mainly because of increasing hog and poultry production. Little change in demand is expected from the beef cattle and dairy industries.

*The succession of new records* each year for food and industrial use of corn is expected to continue in 1987/88. Growth in the markets for high fructose corn syrup and ethanol is expected to account for about 25 million more bushels of corn. Capacity in the wet-milling industry is beginning to be stressed, as evidenced by tight supplies of end products and rising prices. Use of oxygenated fuels as an air pollution control measure may further expand the market for ethanol.

## FEED GRAIN SUPPLY AND USE

As a result of the change in reporting dates for grain stocks, the only consistent year-to-year comparison of supply and use for total feed grains from one year to another is a June/May year. On this basis, the feed grain supply totaled 406 million tons for June 1986 - May 1987, 41 million (11 percent) more than 1985/86. This increase resulted from much larger June 1 stocks in 1986 than a year earlier. Production of feed grains in 1986, at 252 million tons, was 22 million less than 1985's record 274 million tons. Feed grain imports, mainly oats, were up 84,000 tons.

U.S. disappearance of feed grains for 1986/87 totaled 215 million tons — 3 million more than the preceding year. Processing for food and industrial products rose 600,000 tons to 35.4 million. Exports were unchanged at nearly 41 million tons. Feed and residual disappearance was a record-high 139 million tons for June/May, 2.4 million tons above the preceding year and slightly above the previous record set in 1979/80. However, 5 percent more grain consuming units were on hand in 1979/80 than in 1986/87.

## Crop-Year Basis Supply Slightly Smaller in 1987/88

Somewhat different figures result from aggregating the feed grain supply and use on a crop-year basis (June/May for barley and oats and September/August for corn and sorghum) instead of a June/May year. For international comparisons, the aggregate crop-year basis is generally used because international data are aggregated on a country-by-country crop-year basis. The major difference for U.S. data aggregated on a crop year compared with a June/May year is lower beginning stocks.

On an aggregate crop-year basis, the increase in use for 1986/87 over the preceding year will be small relative to the increase in supply, leaving estimated carryover stocks at a record 154 million tons — 28 million more than beginning stocks in 1986/87. Feed grain production for 1987/88 is estimated to total 220 million tons, a drop of 32 million from last year. Thus, the decline in production will more than offset the larger beginning stocks. Imports of feed grains are expected to be about the same as a year earlier at 700,000 tons. Therefore, the crop-year supply for

Feed grains; supply, disappearance, and ending stocks, June/May, 1980-1986

Year	Supply				Disappearance				Ending stocks	
	Begin-: stocks:	Produc-: tion:	Im-: ports:	Total:	Food: & indus.:	Feed: resid.:	Export:	Total:	Govt.:	Total:
Million metric tons										
1980/81	107.2	197.9	0.3	305.4	23.0	128.1	73.6	224.7	7.6	80.7
1981/82	80.7	246.2	0.4	327.3	25.2	127.1	61.4	213.7	7.9	13.6
1982/83	113.6	250.2	0.4	364.2	27.2	136.8	53.8	217.8	14.0	146.4
1983/84	146.4	136.4	0.7	283.5	29.7	126.3	56.9	212.9	24.6	70.6
1984/85	70.6	236.9	0.8	308.3	31.7	128.9	58.4	219.0	10.3	89.3
1985/86	89.3	274.4	0.7	364.4	34.8	136.3	40.7	211.8	25.5	152.6
1986/87	152.6	252.4	0.8	405.8	35.4	138.7	40.7	214.8	49.7	191.0
1987/88	191.0	216.5	0.7	408.2						



1987/88 is estimated at 374 million tons, compared with the record 379 million available for 1986/87.

Total use is expected to rise 4 million tons in 1987/88 to 230 million, with the largest year-over-year gain expected in exports, up 2 million tons from this year's 47 million. Feed and residual disappearance is expected to rise slightly to nearly 145 million tons. Food, seed, and industrial use (FSI) is expected to increase by 700,000 tons to 36.2 million.

Foreign supply of coarse grains (beginning stocks plus production) for 1987/88 is expected to be about 11 million tons or 2 percent larger than 1986/87. Carryover stocks are likely to be up about 4 million tons, and production about 7 million. The major foreign exporting countries are expected to account for nearly 1 million tons of the increase in foreign production. The European Community (EC-12) is expected to harvest about 2 million tons more in 1987/88, but production in Eastern Europe will likely be down over 3 million tons. Production in the USSR is expected to be up more than 5 million tons.

Foreign corn production is estimated at 271 million tons in 1987/88, an increase of 5 million from 1986/87. Corn's portion of this year's foreign coarse grain production is expected to be the same as last year, 46 percent. Of the major exporters, Argentina and South Africa are expected to recover from last year's reduced harvest, but Thailand will likely be down more than a million tons.

World coarse grain trade is expected to increase about 2.0 million tons in 1987/88 from 100.0 million tons in 1986/87. U.S. exports as a share of world trade may rise to 48 percent in 1987/88 from 47 percent this year.

### Corn

The corn market has been sensitive to a number of factors this spring and summer. Some of them were significant changes in exports; the rate of redemption of generic certificates for corn under loan; a relatively tight free-stock situation; the high rate of participation in the 1987 feed grain acreage-reduction/paid-diversion program; and a kind of weather "brinkmanship" during the early growing season.

The net result of these factors was a corn market that vacillated between expectations of adequate free stocks and expectations of tight free stocks with prices having to rise to the loan redemption level. As planting proceeded to the growing season, weather became another cause for uncertainty and price variability. The planting season started slowly, with plantings behind schedule in early April due in part to areas of the Eastern Corn Belt and Northern Lake States low on moisture.

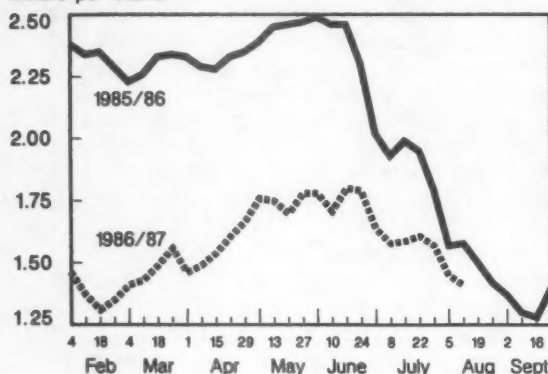
The last week of April brought ideal planting weather and plantings surged ahead of average. By May 10, the 17 major producing States were 76 percent planted compared with a 5-year average of 47 percent — almost two weeks ahead of a normal planting schedule. At the end of May, soil moisture was short over the Corn Belt, the Lake States, the Delta, and most of the Southeast. However, timely rains during the growing season enabled the crops to develop rapidly. By July 26, the crop was 88 percent silked in the 17 major producing States, a benchmark generally not reached until about the 7th of August. Crop conditions for the 17 major producing States on July 26 were slightly improved compared with a year earlier.

Corn prices from the beginning of the crop year (Sept. 1) to midsummer followed generally similar patterns in the 1985/86 and 1986/87 crop years. At the same time, significant differences between the two years reflect both the lower loan rate for 1986/87, and, from mid-February, the factors outlined above. In both years, the harvest-season low was reached in mid-October, followed by a recovery to mid-November of 34 cents a bushel in 1985, and 36 cents a bushel in 1986. Prices then declined from November to February.

Free stocks (total stocks less CCC inventory, Farmer Owned Reserve (FOR) and regular loans) on December 1 totaled 6.3 billion bushels in 1985 and 5.4 billion in 1986. Expected use for the rest of the crop year was 5.1 billion in 1985/86 and 4.5 billion in 1986/87. Thus, free stocks appeared adequate to meet needs depending on how much additional corn went under loan. The chart shows Central Illinois prices as a barometer of the mid-winter to summer market factors for the two crop years.

## Midweek Corn Prices: Central Illinois

Dollars per bushel



### *Soviets Enter Market in February*

The export market was lethargic during the first half of the 1986/87 marketing year. Exports for the Sept./Nov. quarter were 23 percent below a year earlier, and Dec./Feb. exports were off by 32 percent. The major difference between the two years was the complete absence of the USSR from the U.S. export market in 1986/87. For Sept./Nov. 1986/87, exports to countries other than the USSR were up 3 percent, but for Dec./Feb., exports were 6 percent below a year earlier even with USSR exports excluded.

The first reported USSR purchase of corn, 1 million metric tons, was in the last week of February, but the first shipment of 106,000 tons was not made until March 20-26. By that time, sales to the USSR exceeded 2.5 million tons.

The entrance of the USSR into the market coincided with a pickup in exports to other markets. Exports for the March/May quarter were 502 million bushels, more than double year-earlier exports of 204 million bushels. March/May exports were also improved by indications of smaller than expected corn crops in Argentina and South Africa. The estimated production of these two countries was reduced by 3 million tons from March to May. Shipments to the USSR for the quarter were approximately 147 million bushels this year, and only 10 million last year. Exports to all other countries totaled almost 356 million bushels, up 83 percent from year-earlier

exports of 195 million bushels. March/May exports represented a weekly shipment rate of 38.2 million bushels, compared with a weekly rate of 24.5 million bushels during the Dec./Feb. quarter. The strength in Central Illinois corn prices after mid-February this year was in part the result of the pickup in the export market.

At the end of the Dec./Feb quarter, free stocks of corn were 1.3 billion bushels this year and 2.6 billion last year, in contrast to the expected use for March through August of 2.7 billion bushels and 2.8 billion, respectively. Thus, tight free stocks posed a possible runoff of prices this summer in order to facilitate redemption of corn under loan.

### *Generic Certificates New Marketing Tool*

The introduction of generic certificates to the feed grain marketing process in April 1986 was a major new development in the market. Generic certificates (certificates with a fixed dollar face value, an 8-month life, exchangeable for any program crop at the posted county prices, and transferable) are issued to farmers in lieu of cash for part of the deficiency payments, paid land diversion, Conservation Acreage Reserve (CAR), disaster programs, and emergency feed programs. In addition, they are issued to exporters for the Targeted Export Assistance and Export Enhancement (EEP) programs.

Farmers were entitled to \$1.35 billion of generic certificates for the first issuance in April 1986 and about \$2.05 billion from August to December. At first, farmers used generic certificates sparingly. By mid-June 1986, farmers had exchanged certificates for about 35 million bushels of corn. Thus, the use of certificates had not clearly eliminated the tight free-stock situation in the spring of 1986. Tight free stocks and normal seasonal concern over planting and growing conditions for the 1986 crop resulted in a 20-cent-per-bushel rise in spot prices at Central Illinois elevators from mid-April to late June.

From June through August, the weekly rate of exchange of certificates for corn averaged about 16 million bushels. From September through December, the weekly rate

# Issue and Use of Certificates

Date	Value Issued <sup>1/</sup>	Value Exchanged	Value used for corn	Bushels of corn
----- Billion dollars -----				Million
Prior to Dec.	3.4	1.68	.99	596.4
Dec - Feb	3.2	1.51	1.21	750.9
Mar - May	2.3	3.52	2.70	1,641.0
Total	8.9	6.71	4.90	2,988.3

<sup>1/</sup> Includes a small amount of commodity-specific certificates.

## Corn supply, disappearance and stocks, Sept-May

Item	Crop year	
	1985/86	1986/87
Million bushels		
Supply		
Beginning stocks	1,642.8	4,039.5
Production	8,876.7	8,252.8
Imports	4.6	1.6
Total	10,529.5	12,293.9
Disappearance		
Food, seed, indust.	851.1	875.4
Exports	1,087.4	1,138.9
Feed and residual	3,601.0	3,947.9
Total	5,539.5	5,962.2
Ending Stocks		
CCC	550.9	1,491.5
FOR <sup>1/</sup>	652.8	1,483.5
Loan	2,944.4	2,742.6
Free	841.9	614.1
Total	4,990.0	6,331.7
Expected disappearance 6/1 - 8/31	965.5	1,378.8

<sup>1/</sup> Includes special producer storage loans.

increased to 27 million bushels. However, the weekly rate of use of corn rose from 74 million bushels during June - August to 153 million bushels during September-November. Thus, the increase in certificates exchanged from September through December relative to the summer quarter was not bearish on corn prices. However, with additional certificates released in December and subsequent months, the weekly rate of exchange rose to 54 million bushels in January and 92 million in February. This increase, coming prior to the USSR entering the market, did place downward pressure on prices. The Central Illinois price decreased from about \$1.46 a bushel in mid-January to \$1.31 in mid-February.

The pace of exchange of certificates for corn continued upward during March-May, reaching a weekly average of 138 million bushels exchanged during May. Exchanges decreased rapidly during June and July, with weekly averages of 70 million in June and 29 million in July.

## Record Stocks June 1

Corn stocks in all positions on June 1 were a record high 6.3 billion bushels, 1.3 billion above year-earlier stocks. Stocks on farms were up about 350 million bushels, whereas off-farm stocks increased 993 million

bushels from a year earlier. The increase in off-farm stocks mainly reflects the greater quantity of corn in CCC inventory this year — up 941 million bushels from a year earlier.

Ninety percent of June 1 stocks this year were tied up in regular loan, FOR, and CCC inventory, leaving free stocks of 614 million bushels. Last June 1, 83 percent were under loan or in CCC inventory, with 842 million bushels of free stocks. This year, with expected use from June through August of almost 1.4 billion bushels, about 615 million will need to be added to free stocks to meet projected needs. Over 2 billion certificates were outstanding at the beginning of June, and corn exchanges were averaging nearly 74 percent of all exchanges during the first half of July. At that rate, about 1 billion bushels of corn could be redeemed from loans with certificates available June 1. Corn exchanges totaled about 398 million bushels during June and August.

Other factors that may add to free stocks of corn are the rotation of FOR, the sale of corn by the CCC, and new harvest. For a 60-day period preceding harvest, farmers may sell corn in the FOR, if it is in danger of going out of condition, and replace it with new-crop grain after harvest. With the large quantity of corn in the FOR August 1 — over 1.5 billion bushels — a significant amount of corn could be rotated this summer.

In late July, the corn harvest had started in Georgia, Louisiana, and Texas. The harvest pace will increase in these States during August and will extend to more States as well. By mid-August, harvest likely will extend as far north as Kentucky and Missouri. Between the exchange of certificates for corn, rotation of FOR stocks, CCC sales, and the new harvest, market supplies appear adequate to meet needs without driving corn prices above the loan rate to stimulate cash redemption of 9-month loans.

#### *Total Disappearance in 1986/87 Highest Since 1979/80 Record*

Total disappearance of corn is estimated at 7.37 billion bushels for 1986/87, 870 million bushels above the disappearance for 1985/86 and second only to the record of 7.6 billion bushels in 1979/80. Driven by the high fructose syrup and ethanol markets, FSI use

will reach a record of almost 1.2 billion bushels. This category is up 2.7 percent from a year earlier, and almost double the 620 million bushels of 1979/80.

Exports were slow in developing this year, but since March, when the USSR resumed shipments, exports have more than doubled last year's pace. For the entire year, exports are expected to top 1.5 billion bushels, up 284 million from the year-earlier total. In 1979/80 exports were a record 2.4 billion bushels.

Feed and residual disappearance is estimated at a record 4.65 billion bushels this year, 555 million bushels larger than last year and 100 million bushels larger than the previous record in 1979/80. However, a record 82 million grain consuming animal units were on hand in 1979/80, compared with 77 million in 1986/87, implying sharply higher feeding rates this season. The residual component may be larger than in 1979/80.

#### *Area for Harvest Smallest Since 1972*

Farmers planted 66 million acres to corn this spring, a decrease of 10.7 million from last year and the smallest since 1969. Indicated harvest for grain is 59.6 million acres, down 9.6 million from last year and the smallest since 1972. The difference between area harvested for grain and plantings is harvested for silage with a small amount cut for forage, and the balance represents abandonment. The apparent area planted for silage and forage production is a record low 6.4 million acres, down 1.1 million from last year. Much of the decrease is the result of the Dairy Termination Program.

A record 88 percent of the corn base was enrolled in the feed grain program this year. The program required a 20-percent acreage reduction (ARP) and included an optional paid land diversion (PLD) of 15 percent of the enrolled base. Area idled under the ARP totaled 14.6 million acres, and enrollment in the PLD added another 6.9 million, for a total of 21.5 million acres, the largest since the PIK program of 1983. In addition, 2.5 million acres of corn base were shifted to the Conservation Reserve Program (CRP).

Soil moisture was short in the Corn Belt, Lake States, Delta, Appalachia, and much of



the Southeast this spring. However, excellent planting weather in late April and early May enabled much of the crop to be planted about two weeks earlier than normal, and timely rains during the growing season have kept the crop developing rapidly. In late July, the crop condition for the 17 major corn producing States was slightly improved over last year's.

*Near Record Supply  
Available for 1987/88*

The first estimate of this year's corn crop by the National Agricultural Statistical Service (NASS) was for a yield of 121.4 bushels per acre, or 7.23 billion bushels from 59.6 million acres. This year's crop will be about 1 billion bushels less than last year and the smallest since 1983, when the PIK program and severe drought over most of the Corn Belt resulted in a crop of only 4.2 billion bushels.

Even with less corn produced this year, the total supply for 1987/88 will be near last year's record — 12.2 billion bushels, compared with 12.3 billion for 1986/87. Record expected carryover stocks of 4.9 billion bushels, up 900 million from a year earlier, will offset most of the decrease in corn production. Imports will add about 2.0 million bushels to this year's supply, the same as during 1986/87.

*Disappearance Likely to Exceed  
Production in 1987/88*

Disappearance is estimated to total 7.5 billion bushels in 1987/88, up about 200 million bushels from 1986/87 but still 100 million short of the record 7.6 billion disappearance in 1979/80. All categories of use are expected to register year-over-year gains. Continued growth in the high fructose syrup and ethanol markets will take FSI use to a record high, slightly above 1.19 billion bushels.

The hog industry is apparently on the upside of a production cycle, and with further increases expected in broiler and turkey production in 1987/88 feed use will likely rise. Feed and residual disappearance is estimated to be a record 4.7 billion bushels in 1987/88, compared with 4.65 billion this year.

Foreign production of coarse grains this year is expected to be about 7.3 million metric

tons larger than in 1986, an increase of 1.3 percent. Sluggish economic growth in many parts of the world is limiting imports of coarse grains. Consequently, sizable expansion in world trade may have to await more vigorous economic growth abroad, and perhaps some changes in agricultural and trade policies. U.S. exports of corn in 1987/88 are expected to rise by 75 million bushels. The U.S. share of the world market will likely increase 1 percent next year.

The USDA announced in February that it will extend regular 9-month loans for an additional year. Farmers who elect to hold regular loans beyond the maturity date will be paid a storage payment of 26-1/2 cents per bushel per year. The volume of 1986-crop loans held beyond maturity is expected to help assure an adequate supply of corn for 1987/88 through a combination of certificate exchanges and, if necessary, cash redemption of loans.

*Prices May Average  
Higher in 1987/88*

Total disappearance in 1987/88 of 7.5 billion bushels and a harvest of 7.23 billion bushels implies a 270-million-bushel reduction in stocks during the crop year. Although carryover stocks will be a record 4.9 billion bushels, most of the carryover will be in CCC inventory, the FOR, or under loan, and free stocks will be minimal pipeline stocks.

In 1986/87, an estimated 76 percent of the eligible corn will be placed under loan, leaving approximately 3.4 billion bushels of the 1986 harvest unencumbered by loans. An additional 3.9 billion must be added by certificate exchanges, CCC sales, and rotation of FOR if total disappearance for 1986/87 reaches 7.3 billion bushels. In 1987/88, if 76 percent of the eligible corn is put under loan, about 3.1 billion bushels will be unencumbered by loan. If loan placement is less than 76 percent, the unencumbered supply would be larger. For each 2 percent that placement falls short of 76 percent, the amount free of loan would increase 100 million bushels. The average price for this year's disappearance will depend largely on how much 1987-crop corn is placed under loan, the total value of generic certificates issued, and the quantity of corn redeemed via certificate exchanges.

The current estimated disappearance for 1987/88 will be met if certificate exchanges during the crop year approximately equal the amount of this year's crop placed under loan plus 300 million bushels. However, if the certificate exchanges fall short of this, prices will have to rise to stimulate cash redemption of corn under loan. The amount and duration of the spike-up in price will depend on the volume to be redeemed and how bullish farmers become on price. The August issue of *World Agricultural Supply and Demand* projected a price range of \$1.60 - \$2.00 a bushel for average prices received by farmers in 1987/88. The price outcome will depend to a large extent on the availability and use of certificates.

The market this spring and summer was sensitive to weather conditions because of the large cut in planting, combined with the risk of lower yields due to hot, dry weather. Depending on program parameters for 1988, the market may be even more jittery next summer if weather conditions threaten yields. This year, nearly a third of the 8.2 billion bushels on hand March 1 were in the CCC inventory or the FOR. Next year, the CCC inventory and FOR could account for a larger proportion of March 1 stocks. Aside from corn going out of condition, the CCC cannot sell at less than 115 percent of the FOR release price, as long as corn is in the FOR. The release price for the FOR has been set to the target price of \$3.03 a bushel. Consequently,

the threat of sharply lower yields because of weather could send corn prices substantially higher next summer.

### Sorghum

Sorghum disappearance totaled 671 million bushels during Sept.-May, 1986/87, a decrease of 15 percent from year-earlier disappearance of 791 million bushels. Exports were up almost 15 million bushels to 155 million this year. Mexico, Taiwan, Poland, and Portugal all took more this year, with Japan, Israel, Colombia, and Venezuela importing less. FSI use of 12 million bushels was almost half the use in the comparable period last year, mainly because of reduced purchases by the distilling industry. Feed and residual disappearance was down 123.2 million bushels to 504 million bushels for Sep. - May this year. Based on prices at Kansas City, sorghum prices were above feeding value relative to corn for much of the period.

Stocks on hand June 1 were a record 822 million bushels. However, free stocks were only 20.6 million bushels, with the remainder tied up in CCC inventory, FOR, and under loan. Free stocks June 1, 1986 of 34 million bushels were not quite so limiting.

Sorghum use during the last quarter of the 1986-87 crop year may total about 69 million bushels, down 10 million from a year earlier.

Sorghum supply, disappearance, and stocks, Sep.- May

Item	1985/86	1986/87
Million bushels		
Supply		
Beginning stocks	300.2	551.0
Production	1,120.3	941.6
Imports	0	0
Total	1,420.5	1,492.6
Disappearance		
FSI	23.3	12.0
Exports	140.3	154.9
Feed and residual	626.9	503.7
Total	790.5	670.6
Stocks June 1		
CCC	181.4	400.4
FOR	68.0	94.0
Loan	342.9	307.0
Free	37.7	20.6
Total	630.0	822.0

Exports held up well during June and July, and may exceed year-earlier exports by 8 million bushels for the June-August quarter. FSI use is expected to total only 2.6 million bushels, with .6 million used for seed and 2 million bushels used for processing, down almost 2 million from last June-Aug. A significant amount of exports during June - August will come from the new-crop harvest, which will determine to a large part feed and residual disappearance in the balance sheet.

The sorghum harvest started in the Coastal Bend region of Texas in mid-July, and by July 25th had expanded into the Blacklands region. The Texas crop was estimated to be 11 percent harvested by July 25th. By late August, Texas will be more than 50 percent harvested, and harvest will be well along in the Delta and Southeast also. The new-crop harvest that is exported or used prior to September will not be included in the supply for June - August or September stocks, but will be included in the disappearance, and therefore decreases the feed and residual category of use from its true quantity.

The projected average price received by farmers for the 1986/87 crop year is \$1.40 a bushel, down almost 28 percent from the 1985/86 average of \$1.93. The effective loan rate for 1986/87 was also down 28 percent, from \$2.42 a bushel in 1985/86 to \$1.74 a bushel in 1986/87. The average farm price of corn dropped almost 32 percent from 1985/86, compared with the 28-percent decline in its loan rate. Thus, corn feeding expanded into the fringes of sorghum feeding area relative to 1985/86. This explains why sorghum feed and residual disappearance was down this year while corn feed disappearance rose. However, corn is not a substitute for sorghum in certain export markets (especially Venezuela), so exports of sorghum exceeded year-earlier exports. The Gulf export price for sorghum was down 23 percent from a year earlier, less than the decline in the sorghum loan rate or farm prices.

#### *Generic Certificates Less Significant in Sorghum Markets*

Through July 15, 180.2 million bushels of sorghum had been exchanged for \$312.5 million of generic certificates. This represented 5.2 percent of the total value of

certificates used for redemption of feed grains through July 15. However, the combined deficiency and diversion payments of sorghum for 1986/87, plus 50 percent of these payments for 1987/88, was 7.7 percent of the feed grain total. On the other hand, 92.1 percent of the value of certificates redeemed by July 15 were redeemed for corn, but corn deficiency and diversion payments represent about 87.2 percent of the combined payment for all feed grains. Consequently, farmers receiving certificates for both corn and sorghum were using them mainly for corn exchanges, or some farmers receiving certificates on their sorghum program may have sold them.

#### *Production Down from 1986; Supply Unchanged*

The area expected to be harvested for sorghum this year is down about 3.4 million acres from last year. A record 83 percent of the sorghum base was enrolled in the feed grain program this year, compared with 51 percent in 1986. Farmers on 42.4 percent of the base also signed up for the voluntary 15-percent paid diversion option. The set-aside for sorghum this year totaled 4.1 million acres (3.0 ARP plus 1.1 PLD), 1.4 million acres more than last year, and the largest amount diverted to conservation use since the PIK program in 1983. Moreover, through the fourth sign up 1.3 million acres of base were shifted to the CRP. Planting outside the program will be down substantially this year at 2.9 million acres, compared with 6.3 million last year.

Production in early August has been estimated at 758 million bushels, down 184 million from last year's crop. The decline represents the smaller acreage harvested, as yield this year is estimated to be a record 72.1 bushels per acre, up 4.4 bushels from last year's yield.

Carryover stocks are expected to be a record 753 million bushels, bringing the supply for 1987/88 to 1,511 million bushels, up slightly from last year's supply of 1,493 million. No imports were received last year and the same is expected this year.

Free supplies in the carryover stock will be negligible, as nearly the entire carryover will be in the CCC inventory, FOR, or under regular loans, as was the case last year. Last

year, almost 550 million bushels out of the harvest of 942 million were not placed under loan, and through mid-July of this year, 151.3 million bushels were added to market availability through generic certificate exchanges.

The unencumbered supply from this year's harvest may be no more than 345 million bushels, unless farmers place much less of the eligible crop under loan than normal. The amount of sorghum available for the year will depend on the total quantity of certificates issued during the year and the proportion exchanged for sorghum.

Free supplies can also result from prices rising above the loan rate by a margin sufficient to stimulate cash redemption of loans. However, the tail will not wag the dog; sorghum is not likely to be redeemed for cash unless free supplies of corn become short enough relative to market demands that the price of corn rises above the loan rate. At least through the first half of the 1987/88 crop year, we are likely to see a repeat of last year's situation. Corn likely will make further inroads in feed use in areas that normally would feed sorghum, and exports may account for a greater proportion of total sorghum disappearance.

### Barley

Total disappearance of 606 million bushels in the 1986/87 marketing year was 16.1 percent above the previous year. Domestic use was down slightly at 469 million bushels; however, exports recovered to a record high 137 million bushels because of the Export Enhancement Program. Malt and barley used for distilled spirits and beer increased about 3 percent over the previous year. Malt prices remained low throughout the year, and ended the season averaging 20 cents per bushel lower than 1985/86.

Record barley production of 610 million bushels, carryin of 325 million bushels and 7 million bushels of imports combined for a total supply of 942 million bushels in 1986/87. Stocks in FOR totaled 122 million bushels, CCC inventory was at 76 million bushels, 90 million bushels were under 9-month loan, and free stocks were 48 million bushels, for a total ending stock of 336 million bushels.

Program enrollment for barley increased to 82 percent for 1987, compared with 71 percent in 1986 and 57 percent in 1985. The loan rate has dropped to \$1.49 per bushel from \$2.08 in 1985. The increased program enrollment reflects low market prices throughout most of the 1986/87 season and the relatively high target price protection, which remained at \$2.60 a bushel. The average price received by farmers in the 1986 marketing year was \$1.61, compared with a previous 5-year average of \$2.28, a 29-percent drop. Prices were beginning to show some strength relative to a year earlier near the end of the marketing year. This was partly in response to tighter free stocks — 186 million bushels compared to 248 million bushels a year earlier. Prices received in May 1987 were higher than those received a year earlier, for the first time since July 1984. June 1987 prices were 18 cents higher than June 1986 at \$1.57.

Preliminary estimates indicate 2.55 million acres have been taken out of barley production this year in response to program incentives. The reduction has been brought about through the 20-percent acreage reduction requirement for program participation and the optional 15-percent paid land diversion. In August, the barley crop for 1987 was estimated at 518 million bushels, 15 percent below last year's record but slightly above the average 523 million bushels produced annually since 1980. Production plus a June 1 carryin of 336 million bushels and imports of 5 million bushels gives an estimated 1987/88 supply of 860 million bushels.

Barley disappearance in 1987/88 is forecast at 600 million bushels, almost unchanged from last year. Exports are expected to remain strong in response to continued EEP sales. Estimates place this year's exports at 125 million bushels. Feed and residual barley use is projected at 300 million bushels for 1987/88, about the same as last year. Barley feeding value is about 75 percent that of corn on an energy-per-bushel basis, and usually will substitute for corn only when barley prices are below corn prices by a similar margin. Between October 1986 and May 1987, the average feed barley price received in Minnesota and the Dakotas was more than 90 percent that of corn. Feed and residual use of barley in 1986/87 was down 32



Barley and Oats Program Parameters: 1984-1987

Crop	1984	1985	1986	1987
<b>Barley</b>				
Target price (\$/bu.)	2.60	2.60	2.60	2.60
Loan level (\$/bu.)	2.08	2.08	1.56	1.49
Acreage reduction (%)	10	10	17.5	20
Program enrollment (%)	44	58	71	82
Program yield 1/ (bu./acre)	50	51	49	49
Paid land diversion (%)	—	—	2.5	15
Base acreage (mil. acres)	11.6	13.2	12.4	12.9
<b>Oats</b>				
Target price (\$/bu.)	1.60	1.60	1.60	1.60
Loan level (\$/bu.)	1.31	1.31	.99	.94
Acreage reduction (%)	10	10	17.5	20
Program enrollment (%)	14	15	37	44
Program yield (bu./acre)	53	48	50	50
Paid land diversion (%)	—	—	2.5	15
Base acreage (mil. acres)	9.9	9.9	9.1	8.7

1/ The U.S. weighted average of individual farm program yields which are used as the basis for making deficiency and paid diversion payments.

million bushels from 1985/86. While the traditional discount barley price reappeared in May, large corn supplies and prospects for continued large carryover next year suggest little growth in barley feed use.

#### Oats

Oat production in 1986/87 fell to less than 385 million bushels, a decline of 26 percent from the previous crop. Beginning stocks of 184 million bushels and imports of 33 million bushels brought total supply to nearly 603 million bushels, which was 17 percent lower than 1985/86.

Feed and residual use was 393 million bushels, FSI was 73 million bushels, and exports remained low at 3 million bushels for a total disappearance of 469 million bushels. Feed and residual use was 5 percent lower than in 1985 and 15 percent lower than the previous 5-year average. Ending stocks were tight at 133 million bushels; however, 121 million were free stocks, with 4 million bushels in both FOR and CCC inventory and an additional 4 million under 9-month loan.

Oat producers' participation in the feed grain program this year increased to 44 percent, compared with 37 percent last year

and 15 percent in 1985. The loan rate has dropped to \$0.94 per bushel for this year, 22 percent below the average price received by farmers for the last marketing year. However, the target price remained at \$1.60 per bushel, so prospects for increased deficiency payments stimulated an increase in program participation. A total of .9 million acres were held out of production in response to the 20-percent acreage reduction requirement and the 15-percent optional paid land diversion. Acreage reduction requirements accounted for 78 percent of the total. Planted acreage of 18 million is up 22 percent over last year; however, estimated harvested acreage is up less than 6 percent at 7.3 million acres. The increase in planted relative to harvested acres is due in part to higher corn program participation rates and to increased acreage reduction requirements, and partly to the practice of seeding oats as a cover crop on idled acreage.

Oats supply is forecast at 561 million bushels in 1987/88, a decline of 41 million bushels from last year. Production is estimated at 393 million bushels, only 8 million higher than last year. Beginning stocks of 133 million bushels were down 50 million. Ending stocks are projected to decline further this year to 114 million bushels, which would

imply a stocks-to-use ratio of 25 percent, lower than any year since 1956's 23 percent. At 393 million bushels, production will remain at a historically low level. Imports are expected to add 35 million bushels to total supply. Imports have become an increasingly important component of supply since the early 1980's.

Total domestic disappearance of oats for 1987/88 is projected at 445 million bushels. Feed and residual disappearance accounts for 365 million of the total, while FSI use will be near 80 million bushels. Oat prices ranged from \$0.86 to \$1.10 in the summer and early fall of 1986. At those prices, oats were in a normal relationship with the price of corn. Tighter supplies and higher prices since November 1986 combined with low corn prices will continue to limit oat feeding for all but the more specialized uses such as pleasure and race horse feeding.

### Hay

Hay production in 1986 was a record 155.3 million short tons, of which 91.4 million tons were alfalfa or alfalfa mixtures. Adding carryover stocks of 26.7 million tons results in a total supply of 182.0 million tons for 1986/87, also a record.

Processing into alfalfa meal, pellets, and cubes used about 843,000 tons of alfalfa hay, leaving about 90.6 million tons for feeding.

Total use of all hay for the 1986/87 May-April crop year came to 149.6 million tons, an increase of 5 percent over 1985/86 disappearance of 142 million tons. Carryover stocks this May were 32.4 million tons, up 5.7 million tons from a year earlier and the largest carryover since May 1981.

The supply of alfalfa meal and pellets for 1986/87 totaled 872,200 tons, down 100,000 tons from the 1985/86 supply of 973,800. Carryover stocks in May 1986 were 56,000 tons, compared with 118,300 tons on hand May 1985. Production for 1986/87 was 816,200 tons compared with year-earlier production of 855,500 tons. Exports for 1986/87 of 186,000 tons were almost 8 times larger than the 1985/86 shipments of 23,500 tons. Prices of alfalfa meal at Kansas City averaged slightly lower for May-April 1986/87, \$91 a ton, than the year-earlier average price of \$92.71. Domestic use for 1986/87 of 642,100 tons was down 28 percent from the year-earlier use of 894,300 tons.

Hay is expected to be harvested from 60.2 million acres this year, down 1.1 million acres from the 62.3 million harvested last year. The yield per harvested acre last year was 2.49 tons per acre, almost equal to the record yield of 2.5 tons in 1972. Last year yields were reduced in the Southeast because of drought. This year, the Lake States and Pacific Northwest have been short of moisture. The 1987 hay crop is estimated at 150.8 million

Hay (all); acreage, supply, and disappearance, 1981/82-1986/87

Item	Unit	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88 1/
Acreage harvested	Mil. acres	59.8	59.7	61.4	60.6	62.3	60.2
Yield per acre	Tons	2.50	2.36	2.45	2.46	2.49	2.5
Carryover (May 1)	Mil. short tons	25.0	28.1	20.1	26.9	26.7	32.4
Production	"	149.2	140.8	150.6	149.0	155.3	150.8
Supply	"	174.2	168.9	170.7	175.9	182.0	183.2
Disappearance	"	146.1	148.8	143.8	149.1	149.6	
Roughage-consuming animal units (RCAU)	Mil. units	90.2	89.3	85.9	83.4	80.8	79.9
Supply per RCAU	Tons	1.93	1.89	1.99	2.11	2.25	2.29
Disappearance per RCAU	"	1.62	1.67	1.67	1.79	1.85	

1/ Forecast.

tons, down 4.5 million tons from last year's harvest. Production of alfalfa and mixtures of alfalfa is estimated at 86.1 million tons, down 5.3 million from last year. Production of other hay, at 64.7 million tons, is up 842,000 tons from 1986. The decrease in production of alfalfa and mixtures is almost entirely the result of a decrease in area harvested of 1.2 million acres. The U.S. average yield was down about 1 percent from last year. The States with yields down by 5 percent or more were Arizona, Arkansas, Connecticut, Michigan, Minnesota, Rhode Island, and South Dakota. Yields were down in five other States but by less than 5 percent. In the remaining 31 States for which yields are given, the yields equaled or exceeded year-earlier yields. The U.S. yield of all hay is estimated at 2.5 tons per acre this year, equal to the 1982 record.

In mid-July, the U.S. price of baled alfalfa averaged \$65.70 per ton, compared with a year-earlier price of \$61.40. However, the price of other hay this July was \$49.50 per ton, down 40 cents a ton from the mid-July price in 1986.

#### FEED DEMAND

Feed and residual use of feed grains (corn, sorghum, barley, and oats) in 1986/87 is expected to total 143.6 million metric tons, up 7 percent from 1985/86. In 1987/88 another gain of 1 percent is expected in feed and residual. In 1986/87, the gains in feed and residual use were concentrated in corn, which had an increase use of nearly 14 percent, while use of other feed grains declined. Another source of livestock feed is wheat. In 1986/87, the feed and residual use of wheat was 386 million bushels, up 43 percent from 1985/86. For 1987/88, wheat feeding of livestock is expected to decline to 175 million bushels, down 55 percent from 1986/87.

The feed and residual use of feed grains in 1986/87 was the largest in the past 12 years. The residual portion may have been larger in 1986/87 than in many years because of generally fewer numbers of livestock, suggesting less feed would be needed. In addition, since feed and residual use is the balancing category in the use section, any future revisions in the reported categories could change the feed and residual use.

The inventory of all cattle and calves on June 1 was 2 percent below 1986. The demand for feed and pasture from the beef sector should be down next year. The number of brood cows in the inventory is slightly larger than last year. The number of replacement beef heifers and bulls over 500 pounds in 1987 was the same as in 1986, suggesting the beef herd has about stabilized.

The low point in the calf crop may occur in 1987. The decline in beef production and higher slaughter cattle prices, combined with relatively low grain prices, means that producers have an incentive to put as many cattle on feed as they can. Thus, feed use by cattle feedlots is likely to remain strong through the 1986/87 crop year and in the 1987/88 crop year. In addition, cattle may be fed to heavier weights when beef prices are up and feed costs relatively low.

The exception occurs when packers need cattle, and pressure feeders to sell before they would otherwise. During 1987, the packers have been needing cattle at times, and slaughter weights have been below 1986. Still, weights of steers slaughtered under federal inspection have been above average since 1985, perhaps because of shifting to heavier breeds. If this is the case, feed use will likely be somewhat higher for the same number of cattle on feed.

The inventory of dairy cattle on June 1 was 5 percent below a year earlier. The Dairy Termination Program (DTP) was implemented April 1, 1986, to reduce the surplus of milk and milk products by cutting the number of dairy cattle. Dairy replacement heifers 500 pounds and over were also down 2 percent from last year. The use of feed is not down as much as the cattle numbers would suggest, because milk production per cow has been up. In fact, concentrate fed per cow has averaged 2.2 percent higher since the DTP started.

The demand for hay and pasture in 1986/87 is expected to be down from 1985/86, because of the decline in cattle numbers. Roughage-consuming animal units (RCAU) may be 3 percent below last year and result in nearly 2.25 tons of hay supplies per RCAU. In addition, pasture conditions on August 1 as reported by NASS were above the 10-year

average. Thus, pastures in most of the United States will be providing roughage for the animals and producers will not need to start feeding hay early. In 1987/88, RCAU are expected to slip below the previous year, further reducing the demand for roughage.

Feed demand from hog enterprises was likely up slightly in 1986/87 from the 1985/86 crop year, as producers increased the number of sows farrowing this spring. The average dressed weight of hogs slaughtered in 1986 was up 2 pounds from a year earlier, and thus far in 1987 they have averaged 2 pounds above a year ago. These heavier weights have helped offset the smaller number of hogs on feed in the first half of the 1986/87 feeding year.

In 1987/88, feed use by hog producers will likely be higher because of increased numbers of market hogs, and weights are likely to remain high. The number of sows farrowing during December 1986–May 1987 was up 6 percent from last year, and some of these hogs will still be consuming feed in Sept. – Dec. 1987. Reported intentions for numbers of sows to farrow in June–Nov. 1987 are up 8 percent from last year, pointing to more hogs than a year ago being marketed in first-half 1988.

Output of broiler and turkey meat in 1987 has been up from a year earlier as producers respond to relatively low feed prices and the resulting favorable returns. Not only have numbers of birds been increased but the weights of broilers have been higher. Producers have an incentive to produce larger birds because of high prices for breast meat. Also, the larger birds generally have a higher meat yield, making them more desirable for further processing. Feed demand for poultry will likely increase in the 1987/88 feed year because of further expansion in the broiler industry and some increase in turkey numbers.

Feed use by the egg industry may be down in 1987/88 from the 1986/87 level. Producers increased egg production in the 1986/87 feed year, but current low prices are expected to cause a cutback in the number of eggs produced next year. Producers are beginning to decrease orders for replacement pullets, as indicated by the egg-type chick hatch. Replacement pullet numbers could begin increasing toward the end of the 1987/88 feed year, as producers need pullets to replace old hens late in 1988 and into 1989.

## FOOD, SEED, AND INDUSTRIAL USE OF CORN

The role of food, seed, and industrial use (FSI) of corn continues to expand. A major reason is the strong demand for corn sweeteners and the fuel additive ethanol. Since 1975, FSI consumption has grown by 129 percent, compared with a 31-percent increase in feed and residual consumption and a 27-percent change in total corn disappearance (including exports). FSI use was equivalent to 14.6 percent of feed and residual disappearance in 1975/76, and averaged 15.7 percent from 1975 to 1981. This crop year the estimated FSI use will be 25.6 percent of feed and residual disappearance. FSI use as a percentage of total corn consumption (including exports) has increased from a 9.4-percent annual average for 1975–81 to 16.2 percent for 1986/87.

FSI has experienced three different 4-year growth patterns since 1976. The first period was 1976/77 to 1979/80, when annual increases averaged 5.3 percent. These were the emerging years for the HFCS and fuel ethanol industries. HFCS was just developing as an alternative to sugar, while the energy crisis was giving ethanol the opportunity to develop as a fuel alternative.

In the second period, 1980/81 to 1983/84, the HFCS and ethanol industries went through tremendous growth and change. HFCS was adapted for use in soft drinks. High fuel prices and government subsidies provided ethanol with the opportunity to get established. Because of these factors, annual growth during this period averaged 11.1 percent.

In the third period, 1984/85 to 1987/88, HFCS gained approval for 100-percent replacement of sugar in the manufacture of soft drinks. HFCS has since become almost universally adopted as the main caloric sweetener for soft drink bottlers, and slower growth rates have resulted. During this time, ethanol sales have struggled, especially in 1986 with the large surplus of fuel stocks and lower prices. Annual FSI growth for 1984/85 to 1987/88 has fallen well behind the pace of 1979–83, and will likely average 5.6 percent.

Per capita corn sweetener use surpassed sugar consumption in 1985 and the gap is,



Food, seed, and industrial use of corn as percentage  
of domestic and total usage

Year beginning September 1	Corn FSI use	Feed and residual	Total corn use	FSI of feed and residual	Percent FSI of total
	Million bushels			Percent	
1975	521	3569	5767	14.6	9.0
1976	542	3591	5789	15.1	9.4
1977	581	3717	6207	15.6	9.4
1978	608	4264	6996	14.3	8.7
1979	640	4549	7604	14.1	8.4
1980	718	4157	7238	17.3	9.9
1981	797	4169	6975	19.1	11.4
1982	895	4521	7249	19.8	12.3
1983	975	3818	6694	25.5	14.6
1984	1091	4079	7036	26.7	15.5
1985	1106	4095	6496	28.3	17.9
1986	1191	4650	7366	25.6	16.2
1987	1225	4700	7525	26.1	16.3

increasing. Per capita consumption of corn sweeteners in 1987 is projected to reach 67.9 pounds, compared with 61.1 for sugar. HFCS use is expected to reach a record 46.4 pounds per capita. In 1970, for comparison, corn sweetener consumption was 19.3 pounds per capita versus 101.8 for sugar. HFCS use was .7 pound that year. By 1980, corn sweetener use was 40.2 pounds per person, sugar 83.6, and HFCS had climbed to 19.1 pounds.

HFCS has swept out of the price doldrums it suffered through this past winter. Demand for HFCS was very weak late last winter and supplies were plentiful. HFCS-42 (used primarily for baking and milling products) traded for as low as 8 cents a pound. However, the unseasonably warm spring and the hot summer have pushed soft drink sales to much higher levels, along with the demand for HFCS. The price for HFCS-55, used primarily for soft drinks, has returned to the 19-20 cent area (wet) and supplies are very tight this summer. HFCS-42 has returned to the 12-14 cents a pound range.

Another important reason for higher HFCS prices has been the corn wet millers changing some of their "swing capacity" to produce other products. Swing capacity in a plant allows refiners an opportunity to switch some of their plants' operation to different products which have higher profit margins.

Last year when crude oil prices dropped as low as \$10-a-barrel, profit margins for ethanol were very low, so producers stopped using their swing capacity to produce ethanol. However, the situation changed this spring

when HFCS prices reached record lows and crude oil prices rose to \$17-18 a barrel. Producers switched some of their capacity back to ethanol and away from sweeteners. This switch tightened available supplies of HFCS-55 while hot weather increased demand. There have been rumors that some soft drink bottlers have threatened to return to sugar due to the high HFCS prices and lack of supplies.

HFCS-42 supplies have been adequate for most of the summer. However, while most users have commitments for their needs on an annual basis, there has not been any surplus of supply. This summer producers have switched excess capacity from HFCS-42 to HFCS-55 or even ethanol.

The new HFCS futures contract at Minneapolis completed its first delivery cycle in July and some traders had contracts delivered against them. This has caused a reluctance on the part of speculators to trade the contract. Lacking better sources of supply, demand, and stock level information has also contributed to the lack of speculator interest, and trading volume has suffered accordingly. But the contract is still relatively new and optimism is still high.

The switching of corn refining capacity between products has a negligible impact on total corn use. As long as overall use of plant capacity is relatively high, FSI disappearance will continue to improve at a steady pace. The high prices wet and dry-millers receive for by-product feeds and meals and corn oil has meant that products can offset a higher

proportion of costs. Some corn millers are receiving record profits this year.

A new development in the evolution of corn sweeteners has been crystalline fructose, a dry corn sweetener. A new plant is scheduled to begin production this summer. Crystalline fructose currently sells for \$.60-.80 a pound and is only used in the sweetening of health foods. With a larger and a more efficient plant, plans are to sell crystalline fructose or crystal for \$.30-.40 a pound. The lower price should make crystalline fructose competitive for use in a wider range of products.

A new process has also been developed which combines heat and acoustics, known as pulse drying. It provides a reliable method of solidifying HFCS to manufacture a dry HFCS-42 product. The company that developed the technology feels it is the sweetener of the future, but has yet to produce the product on a commercial scale. So regardless if crystalline fructose or dry HFCS-42 becomes the solid fructose of the future, modest expansion in corn use should result.

Supplies of glucose have also been tight this summer. Wet-millers also found low profit margins for glucose when prices dipped to 6.5 cents a pound late this winter. Dextrose prices have remained relatively constant with supply levels fairly stable. Starch production has recovered from its slump in the early 1980's. The weaker dollar has helped exports of paper and corrugated products which use starch in their manufacturing process. The recovery of the

U.S. economy from the recession several years ago has also stimulated domestic sales of starch products.

Ethanol sales have rebounded from the problems of last year. Sales in 1986 suffered from strong competition of low priced alternative fuels and octane boosters. There were also questions about ethanol's quality. In 1987, ethanol is again establishing sales records each month. Higher crude oil prices have, in most cases, increased the profit margins of ethanol above those of HFCS, meaning that swing capacity in the industry has returned to ethanol production. Even with the use of swing capacity, there have been times this summer when there have been short supplies in the ethanol market.

Other news has been the emergence of ethanol as a tool in the fight against air pollution. Colorado became the first State to enact legislation which mandated the use of oxygenated fuels during the winter months in an effort to reduce high levels of carbon monoxide. Although ethanol is just one of a number of fuels qualifying for use as an oxygenated fuel, it certainly stands to gain from this type of legislation.

The Federal Government and a number of States are considering similar legislation. There are currently about 75 cities and rural communities which are not meeting the EPA air pollution standards. The decision Colorado made is one of a number of solutions to the pollution problem, but mandating oxygenating fuels use certainly has to rank as one of the more viable alternatives for other

Corn: Food, seed, and industrial use 1/								
Year beginning September 1	Wet-milled products					Dry-milled and alkaline cooked products	Seed	Total
	HFCS	Glucose and dextrose	Starch	Alcohol	Dry-milled alcohol			
					Million bushels			
1975	45	162	116	5	20	154	20	522
1976	62	164	116	10	15	155	20	542
1977	80	170	124	10	20	158	20	582
1978	105	170	124	15	20	155	20	609
1979	127	170	120	25	20	158	20	640
1980	165	183	120	35	35	160	20	718
1981	185	183	130	83	35	162	19	797
1982	215	188	127	130	50	170	15	895
1983	256	191	145	150	50	164	19	975
1984	310	188	142	170	100	160	21	1,091
1985	330	190	150	185	125	161	19	1,160
1986 2/	343	190	156	190	135	161	16	1,191
1987 3/	350	191	160	200	145	163	16	1,225

1/ Data in this table are estimates based on production and sales figures obtained from various Government and private industry publications as well as on unpublished information provided by numerous industry sources. 2/ Preliminary. 3/ Projected.

communities and States. A number of bills have been introduced in Congress to mandate ethanol use on a national level.

For the near term, ethanol appears to be the only corn product with big growth potential, particularly if mandated use occurs at the national level. Corn products such as HFCS, starch, glucose, and dextrose are facing mature markets with little chance for accelerated growth. The dry corn sweetener market has the potential to become a fast-growth product, but it is premature to assess the impact it might have in the marketplace.

### WORLD COARSE GRAIN SITUATION AND OUTLOOK

World supplies of coarse grains will remain abundant in 1987/88 despite a forecast 3-percent drop in production. Carryin stocks will be at record levels. While U.S. coarse grain production will decline, foreign output is expected to rise 1 percent to a second consecutive record. Although prices will remain relatively low, foreign utilization is expected to rise by 2 percent compared to 4 percent in 1986/87. However, world utilization will exceed production for the first time since 1983/84, and world stocks are projected to decrease 5 percent. The ratio of ending stocks to utilization is forecast to dip slightly from 26.6 percent in 1986/87 to 24.9—still the second highest on record.

The global trade outlook is for an expansion of 1.8 percent in 1987/88, compared to 2.8 percent in 1986/87. Trade in corn is forecast to rise 4 percent, while barley and sorghum trade each decline slightly. In contrast to 1986/87, when foreign coarse grain exports are expected to drop 19 percent and U.S. exports rise over 30 percent, 1987/88 U.S. sales are currently projected to increase only 4 percent, and foreign sales to drop 1 percent.

While coarse grain trade has started to turn around from the severe drop experienced in 1985/86, sharply lower prices have stimulated the increase in volume, and revenues are not expected to increase. U.S. earnings from coarse grain exports for 1986/87 are forecast about the same as 1985/86 at \$3.8 billion despite the 30-percent pickup in quantity.

World coarse grain trade: Major exporters and importers, by commodity, 1984/85-1987/88

Country	1984/85*	1985/86	1986/87 forecast	1987/88 forecast
Million metric tons				
<b>CORN</b>				
Exporters				
U.S.	46.7	31.5	39.4	40.7
Argentina	7.0	7.4	4.0	7.0
China	5.5	6.4	3.7	3.8
Thailand	3.2	3.8	2.5	1.5
South Africa	0.2	1.4	2.3	1.5
Others	4.2	4.3	5.2	4.8
Total	66.8	54.8	57.1	59.3
Importers				
Japan	14.0	14.6	15.9	16.2
USSR	20.3	10.3	9.2	8.1
EC-12	9.0	4.8	3.1	3.1
Korea, Rep.	3.0	3.6	4.5	5.6
Taiwan	3.1	3.1	3.5	3.4
Mexico	1.7	1.7	3.4	3.5
China	0.1	0.4	1.9	2.7
East Europe	1.4	2.5	1.6	1.8
Brazil	0.2	1.9	1.3	0.0
Egypt	1.7	1.7	2.5	2.3
Others	12.3	10.2	10.7	12.5
Total	66.8	54.8	57.1	59.3
<b>SORGHUM</b>				
Exporters				
U.S.	7.5	4.1	5.1	5.8
Argentina	3.4	2.2	1.0	0.8
Australia	1.2	1.1	0.8	1.0
Others	1.0	1.2	1.6	0.8
Total	13.1	8.6	8.5	8.4
Importers				
Japan	4.6	5.1	4.0	3.8
Mexico	2.5	0.6	0.7	1.5
Taiwan	0.6	0.8	0.8	0.8
Venezuela	0.9	1.0	0.9	0.9
Israel	0.5	0.5	0.3	0.5
Others	4.0	0.6	1.8	0.9
Total	13.1	8.6	8.5	8.4
<b>BARLEY</b>				
Exporters				
EC-12	7.6	7.3	6.0	7.0
Canada	2.5	4.8	6.0	4.5
Australia	4.7	3.7	2.3	2.6
U.S.	1.2	0.8	3.3	3.3
Others	2.0	1.8	0.9	0.9
Total	18	18.4	18.5	18.3
Importers				
USSR	4.7	6.6	8.0	7.5
Saudi Arabia	4.7	2.8	4.0	2.5
Eastern Europe	1.6	3.3	1.3	1.5
Japan	1.7	1.5	1.3	1.4
Others	5.3	4.2	3.9	5.4
Total	18	18.4	18.5	18.3
<b>COARSE GRAINS TOTAL TRADE</b>				
	100.7	83.4	85.7	87.2

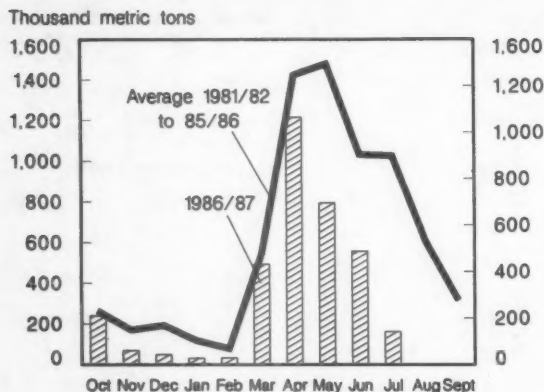
\*October-September year.

Although impossible to quantify precisely, trade in feed wheat has also risen in 1986/87 because of attractive prices. Larger-than-usual supplies of feed-quality wheat exported by the EC, Australia, and Canada are competing with coarse grains in important markets, including the USSR, Korea, and Mexico.

#### *Dwindling Competitor Supplies Boost U.S. Corn Sales*

One of the most striking features of coarse grain trade in 1986/87 has been an

## Argentina Monthly Corn Exports



unseasonal rise in U.S. corn exports during the spring and summer months when exports usually slack off. (see graph) The key to this was a poor crop in Argentina, the world's second largest corn exporter, and a dramatic fall in its exports. In addition to lower production, low grain prices and rising cattle prices in Argentina have led to an unusual increase in corn used locally for feed.

Argentina sells most of its corn and sorghum in the months immediately following harvest—March through August. This summer, exports have dropped precipitously, indicating that most supplies are probably sold. (see graph) Many buyers have had to turn to the United States. Argentina's 1986/87 corn exports are now forecast at just 4 million tons, down 45 percent from 1985/86, and the lowest since 1979/80.

Other developments are also contributing to the current lack of supplies outside the United States. A critical factor is a sharp reduction in Thailand's 1986/87 production and prospects for 1987/88 production and exports because of lower corn plantings and 2 months of hot, dry weather. The 1987/88 Thai corn crop is currently forecast to fall 27 percent, on top of a drought-related 24-percent reduction in 1986/87. Thai corn exports are forecast to decrease by a third for 1986/87 to 2.5 million tons and to drop 40 percent for 1987/88 to 1.5 million tons—the lowest level in 10 years. The impact of the Argentine and Thai short falls has been exacerbated in recent months by China's cut in corn exports and increase in imports, again somewhat

unexpectedly. This has been driven by higher domestic demand stemming from rapidly increasing livestock production. China's 1986/87 exports are forecast to fall over 40 percent—nearly 3 million tons—while imports rise to 1.9 million tons from under 400,000 tons the previous year.

Of the traditional competitors, only South Africa has registered an increase in its forecast 1986/87 exports of about 1 million tons to 2.3 million. However, as world supplies became increasingly tight during recent months, South Africa's harvest came in lower than earlier forecast. It reportedly has had difficulties meeting export commitments, mainly to East Asian markets.

The only other supplier whose corn exports have not dropped in the last few months has been the EC. 1986/87 EC corn exports to countries outside the EC are forecast at 1 million tons, mostly from France. Most of this is going to markets in North Africa and the Middle East.

### *Policies Will Heavily Influence Competitor Corn Exports in 1987/88*

Continued low prices are one of the critical variables shaping current competitor behavior. In Thailand, there has been some shift in area planted from corn to cassava and soybeans due to better relative prices. Because of financial stress, South African farmers cut fertilizer use in 1986/87, affecting yields. The Government cut producer prices 10 percent and has taken steps to encourage higher domestic consumption rather than exports. Thus, any increase in South Africa's 1987/88 crop (for which planting begins in October) will likely be a result of more favorable weather rather than increased area or input use.

In Argentina, where 1987/88 corn planting also has not yet started, a rebound in production is anticipated because of higher yields, and exports are forecast to recover to 7 million tons. However, planting intentions remain difficult to judge. More attractive soybean prices could discourage some corn planting. Although the Government recently eliminated export taxes on coarse grains, this may only have a mild impact at the farm level, while the continuation of high domestic beef prices could absorb more corn locally and leave less for export.



Recent policy changes aimed at increasing grain output in China are having some positive impact and a record corn crop is forecast for 1987/88, up 9 percent, to 75 million tons. However, China is not projected to increase exports significantly, while imports may continue to rise as domestic feed use continues to increase rapidly. From its position in the mid-1980's as a net exporter, China could gradually shift to a net importer in the next few years. Weaknesses in its internal transportation system mean that China is unable to move surpluses to deficit areas, and explain why China simultaneously imports and exports.

Low prices are having an impact on policies in Brazil, a potential corn exporter. Following a record crop in 1986/87, Brazil encountered storage problems and considered exporting surplus supplies. However, unable to do this at current prices without large subsidies beyond its means, Brazil recently announced an alternative approach. It plans to reduce the domestic price of corn to world levels for export producers of poultry, eggs, and pork, and export livestock products rather than grain.

The EC is likely to continue its efforts to export corn in 1987/88. Continued high production and lower use has led to larger surpluses. Utilization of corn for feed and starch is trending downward because of greater substitution of wheat and non-grain feed ingredients. In the short term, imports from outside the EC will be propped up by the U.S.-EC compensation agreement concerning Spain's entry into the EC. This calls for annual imports from outside the EC of 2 million tons of corn and 300,000 tons of sorghum by Spain. However, this could also add to surpluses elsewhere in the EC and increase pressure to export either corn, barley or feed wheat. These latter two were the big gainers in 1986/87 Spanish imports. In early August, the first sales of about 200,000 tons of U.S. corn were made under this agreement. Despite some adjustments in recent months, no significant EC policy reforms are soon expected that would discourage higher grain production and exports and encourage imports.

#### *Little Change Forecast for 1987/88 Sorghum and Barley Trade*

World sorghum trade has been slow in recent months. Prices have been unusually

high relative to corn while exportable supplies were generally down. During 1986/87, only the United States and Sudan have increased exports. In the last few months, major importers such as Japan and Mexico have increased corn imports at the expense of sorghum. The main exception has been Venezuela, where sorghum purchases have stayed higher in this period due to a policy banning corn imports. For 1987/88, world trade is forecast to decrease about 1 percent and remain well below levels of the early 1980's.

Barley trade is projected to fall just 1 percent during 1987/88 from the previous year's record. The major change is a fall in Soviet imports of 1.5 million tons because of the largest domestic barley crop since 1976. The continued buoyancy of the market is largely related to Saudi Arabia's soaring imports, fueled by import subsidies. Large sales by the United States, the EC, Canada, and Australia are expected to continue unless there is a change in policy. While Saudi Arabia has initiated efforts to increase its own barley production, this is not yet a factor restraining imports.

World exportable supplies of barley will again be large in 1987/88. EC output is forecast to increase by over 2 million tons, with a smaller rise forecast for Australia. Although Canada's crop will fall, large carryin stocks ensure that Canada will be able to meet any potential export demand.

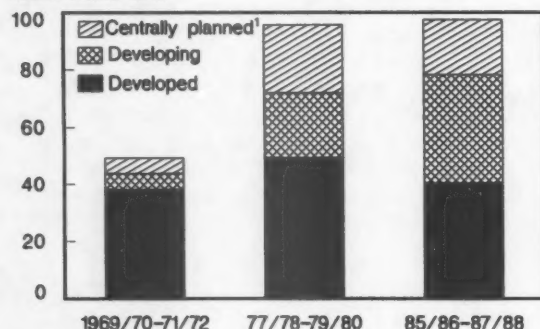
#### *Importer Response to Favorable Prices Mixed*

Although low world prices have made imported feed grains more attractive in the last year, only a few countries have exhibited strong increases in imports. Other factors that have affected import decisions include strong foreign production, agricultural and trade policies in many countries, sluggish economic growth, financial constraints, and competition from feed wheat. However, there have been a number of shifts in market shares due to changes in both prices and exportable supplies. The U.S. market share for coarse grains is forecast at 56 percent for 1986/87, a gain of 12 percent, and at 57 percent for 1987/88.

For the developed countries, in the last decade coarse grain imports have been on a

# World Coarse Grain Imports: Average Share by Country Category

Million metric tons



1986/87 and 1987/88 forecast.  
1/ Includes People's Republic of China.

downtrend that will continue in 1987/88. (see graph) Much of this is accounted for by decreasing EC imports as discussed above. Japan—usually the world's largest importer, with negligible production and large feed and industrial use—is forecast to increase coarse grain imports only modestly for 1986/87 and 1987/88. Despite lower costs for imported feed ingredients, various policies have restricted increases in domestic livestock production and consumption. At the same time, the sharp decline of the dollar has not only made feed cheaper, but has also made meat imports more attractive.

The situation for centrally planned countries is more erratic, and it is harder to discern clear trends in recent years. Net imports of coarse grains are forecast up for 1986/87 and down for 1987/88. Total grain production in the USSR in 1986/87 was the best since 1978/79, and coarse grain output the highest in 10 years, reflecting favorable weather and greater use of "intensive technology." However, Soviet grain imports have shown little change from 1985/86. For 1986/87, imports of feed wheat are climbing to an estimated 4 million tons. Large feed use has been related to high livestock inventories and a cold winter and late spring.

Extensive replanting and generally favorable summer conditions have improved the outlook for 1987/88 Soviet production. Coarse grain production is forecast up 5

million tons to a near-record level, with the largest spring barley crop since 1978. Coarse grain imports are expected to decline 1.5 million tons, but coarse grain utilization is projected to be the highest on record, in part due to reduced feeding of wheat caused by a smaller wheat crop.

Developing countries as a group are increasing coarse grain imports, up by a forecast 16 percent for 1986/87. Striking increases are taking place in a number of countries, including Algeria, Korea, Mexico, Saudi Arabia, and Taiwan. In 1987/88, with imports projected to rise another 6 percent, the share of world trade accounted for by developing countries may surpass 40 percent for the first time. Economic growth in certain countries, lower prices, and various export and credit programs have stimulated much of this current trade. Expansion of developing country imports has resumed after declines in both 1984/85 and 1985/86. During the 1970's, developing country coarse grain imports grew by an average of about 20 percent per year.

Within the developing countries, East Asia has displayed very dynamic gains in recent months, bolstered by robust economic growth and strengthening currencies. Both Taiwan and Korea have stepped up purchases from the United States, possibly in response to their large trade surpluses. Lower prices for feed grain imports have been an important factor in increasing Korean meat consumption, supported by other policies. Low feed costs and favorable producer prices for livestock led to a 19-percent rise in Korea's compound feed use for 1986 and a 35-percent jump in the first half of 1987. Despite strong growth in coarse grain imports, Korea also has bought more wheat for feeding. Wheat for feeding is forecast to make up about one-third of total grain fed in Korea in 1986/87, and over 20 percent in 1987/88. Some of the rise in Mexico's coarse grain imports has been for food rather than feed use, and Mexico is also taking more wheat for feed in 1986/87. Meat demand is currently weak because of low consumer purchasing power. But economic growth is expected to pick up in 1988, and bolster feed use and livestock production.

U.S. Corn Exports, Selected Destinations (Sept. - Aug.) 1/

	1982/83	1983/84	1984/85	1985/86	1986/87 Accumulated exports 2/	1986/87 Outstanding sales 2/
1000 MT						
Canada	270	142	325	215	280	19
Latin America	6,018	5,400	3,205	3,416	5,215	435
Mexico	3,639	2,904	1,649	1,551	2,735	404
Caribbean	558	593	462	446	592	11
Venezuela	889	1,159	664	1	0	0
Brazil	0	129	209	1,06	1,196	20
EC-12	8,412	8,252	5,823	3,540	2,133	113
Spain	2,010	2,096	1,899	1,729	295	63
Portugal	2,193	2,169	1,417	1,055	693	50
Other W. Europe	263	119	32	3	3	0
Eastern Europe	1,311	684	570	1,003	774	0
German Dem. Rep.	725	467	423	362	492	0
USSR	3,128	6,123	14,680	6,377	4,102	0
Middle East	1,040	1,098	1,384	964	1,687	121
Iraq	0	251	385	182	512	84
Israel	419	235	228	293	385	13
Asia & Oceania	23,256	21,446	17,470	13,868	19,403	1,494
Japan	12,839	14,160	11,620	8,918	11,540	1,191
China	2,250	0	0	0	1,088	0
Korea Rep.	3,961	3,017	1,466	1,238	3,746	123
Taiwan	2,742	3,012	2,968	2,747	3,029	180
Africa	2,286	4,965	3,484	2,239	3,367	139
Algeria	299	357	561	326	910	0
Egypt	1,493	1,240	1,348	1,539	2,163	115
Tunisia	130	241	107	143	90	23
Unknown	1,274	746	1,495	445	0	326
Total	46,218	47,878	47,085	31,104	36,964	2,647

Numbers may not add due to rounding.

1/ Excluding products.

2/ As of Aug. 13, 1987. Outstanding sales are not necessarily consistent with eventual export shipments.

Source: Foreign Agricultural Trade of the United States data base and U.S. Export Sales.

FEED INGREDIENT CONSUMPTION FOR THE POULTRY INDUSTRY  
by  
Mark Ash and William Lin

**Abstract:** Nutritional characteristics such as energy, protein, and vitamin and mineral content, as well as relative price differences, determine which feed ingredients are used in layer, broiler, and turkey diets. Survey results from poultry feed manufacturers indicated the different regional uses of feed grains, oilseed meals, grain byproducts, animal proteins, processed byproducts, and microingredients. Feed grains accounted for 64 percent of the concentrates consumed in poultry rations, with yellow corn representing 52 percent of the total ingredients. Soybean meal was the principal source of protein and made up 19 percent of the poultry concentrates.

**Keywords:** Feed ingredients, layers, broilers, turkeys, regional consumption, manufacturing survey.

ERS surveyed the formula feed manufacturing industry in late 1985. Feed ingredient use was one section of the questionnaire. Questionnaires were mailed to each known commercial mill producing feed for wholesale or retail sale to customers, and every known cattle feedlot, dairy, hatchery, hog, broiler, and turkey producer that manufactures feed for its own operation. Respondents reported the tonnage used in all primary feeds which they manufactured, based on 42 distinct categories of feed grains, oilseed meals, animal proteins, other processed byproducts, and microingredients.

The data included supplements and premixes manufactured by commercial establishments, along with complete feed rations. For poultry, 95 percent of feeds manufactured are nutritionally complete rations, so the data accurately measured the ration composition. In contrast, livestock feeders purchase complete feeds less often, and depend heavily on high-protein supplements to mix with their own grains. Thus, only data for broilers, layers, and turkeys are presented. Obviously, these rations fluctuate according to relative ingredient prices in each manufacturing locale.

Many mills produce some poultry feed and several different types of livestock feed. To separate the ingredients included in broiler, layer, and turkey feeds from all other lines, only mills that had over 75 percent of their total feed production in any one of layer, broiler, and turkey feeds are represented in

Table 1: Consumption of feed by type of livestock and poultry, 1984

Feeding activity	Consumption
	Million tons
Dairy	34.3
Fed cattle	34.0
Other beef	11.6
Layer-grower	19.6
Broiler	17.7
Turkey	5.6
Hogs	47.2
Other	9.9
Total	179.9

the tables. This criterion was selected because it permitted a large enough sample for analysis, but restricted the amount of ingredients that may actually be used in other animal feeds. The response rate was good. For example, of the top 17 broiler producers, 15 returned survey questionnaires, and as much as 55-60 percent of the total U.S. broiler feed tonnage was reported.

Data were collected for each State, and are reported here by USDA farm production regions. Although no responses met the criterion from the Lake States, Northern Plains, and Mountain regions, the other regions in table 2 accounted for 94 percent of the



Nation's broiler production. Total estimated feed consumption for 1984 is listed in table 1, with the national poultry feed tonnage about 42.9 million tons. This would mean that poultry consumed one-fifth of the total concentrates fed to all livestock. The Southeast was, by far, the leading broiler production region and accounted for just over one-third of total broiler feed tonnage. This proportion was up from 23 percent in 1975.

### *Feed Grains*

Grain was the major energy source in poultry rations and made up 64 percent of the tonnage nationwide. The grain of choice was yellow corn because it is high in caloric content and contains xanthophyll, the pigment responsible for the yellow in egg yolks and the poultry skin color preferred by many consumers. Corn use was highest in the Appalachian region and lowest in the Mountain and Southern Plains regions, where it was replaced by wheat and sorghum. During the summer, wheat may become competitively priced with corn in some areas, but lacks the pigments needed to affect carcass color. Sorghum may also be easily substituted in broiler and turkey rations, but its price must be discounted to less than 90-95 percent of the price for an equivalent weight of corn because of lower energy content. Thus, sorghum was limited primarily to the South where it is grown. Barley was little used in poultry diets because of its unpalatability and high fiber, low-energy content. Oats were generally fed only to replacement chickens.

### *Oilseed Meals*

The amino acid requirements of poultry are satisfied mainly by the high protein content of oilseed meals, which made up nearly 20 percent of broiler feed ingredients. Soybean meal is an ideal source for these essential nutrients and is the principal oilseed used for poultry. The protein requirement varies depending on the bird's rate of growth or egg production, breed, environmental temperature, and diet energy content. Cottonseed meal contains pigments which discolor eggs, and certain compounds in rapeseed meal may hinder egg production and broiler growth. These factors limited the consumption of both oilseed meals. Tables 2-4 shows that the Southeast was the leading region for soybean meal in poultry feed. Some

regions may show a disproportionately high or low level of use, due to the production of high-protein supplements or mineral premixes. Examples of this were turkey feed in the Lake States and layer feed in the Northern Plains.

### *Grain Byproducts*

The primary grain byproducts incorporated into poultry feeds are corn gluten meal and wheat millfeeds such as middlings and bran. Corn gluten meal supplies another good source of amino acids and coloring agents. It was consumed relatively more in the Northeast than in other regions. Wheat millfeeds are relatively low in energy composition, but may be used economically in layer and turkey rations in areas surrounding the flour milling industry. All grain byproducts made up 3 percent of broiler feed ingredients.

### *Animal Proteins*

Fish meal, meat and bone meal, poultry byproduct meal, and other animal byproducts furnish a portion of the protein used in poultry feeding but their use is generally restricted to less than 10 percent of any particular ration. Fish meal does contain some key amino acids not available in vegetable proteins. However, it can be relatively expensive and is limited in the diet to avoid fishy flavor in the end product. In 1984, animal proteins accounted for 8 percent of the ingredients used for broiler feeds. Meat rendering plants for cattle and poultry supply substantial amounts of byproducts for the Pacific, Southeast, and Delta region. Feather meal is used primarily in broiler feeds, and more heavily in the Pacific region.

Animal and vegetable fats are included because they are very high in dietary energy and enhance feed efficiency and weight gain in broiler and turkey diets. Fats are also valued for their palatability and improvement in the physical texture of the feed. Fats are added at a 2- to 5-percent rate in most regions.

### *Other Byproducts*

Alfalfa meal, like corn gluten meal, is high in protein and rich in xanthophyll. The Northern and Southern Plains and Mountain regions have the highest concentrations of

alfalfa meal in poultry feeds. Molasses is another excellent energy source and useful as a pellet binder, but rations are generally limited to 5 percent because excessive amounts cause diarrhea. These miscellaneous processed ingredients made up about 3 percent of broiler feed ingredients.

### Mineral and Vitamin Supplements

Minerals such as calcium and phosphorus, are essential in beak and bone development in growing birds, and in egg formation in mature layers and breeding hens. These minerals can be supplied by fish meal and meat and bone meal, or with ground limestone, dicalcium phosphate, and defluorinated phosphate. Salt is usually added to diets at a 0.3-percent rate to prevent cannibalism and to improve performance. These major and trace minerals accounted for 2 and 5 percent of broiler and

layer feeds, respectively. Vitamins A, D, E, and K are routinely mixed into the ration in trace amounts to meet the requirements missed by the major feed grains and other ingredients in the diet. Hence, their use varies regionally with the types of feedstuffs that predominate locally. Although drugs are not nutrients in the same sense, they do enhance performance and were included in rations at less than 0.1 percent.

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Table 2: Layer-grower ingredients, by region, 1984

	Northeast	Lake States	Corn Belt	Northern Plains	Appalachia	Southeast	Delta	Southern Plains	Mountain	Pacific	U.S.
	Thousand tons										
Corn	418.5	119.0	138.1	220.4	110.7	660.9	200.3	473.4	76.2	120.7	2,346.2
Sorghum	0.0	0.0	2.6	36.8	0.0	41.4	111.8	189.7	39.5	46.4	468.2
Barley	4.8	0.2	0.0	1.5	0.1	0.0	0.0	0.0	3.6	22.8	33.1
Oats	6.5	11.1	10.5	7.3	0.3	0.0	0.7	0.4	10.7	0.6	48.2
Wheat	1.7	5.7	0.3	27.1	0.9	25.7	30.4	117.2	27.7	13.1	249.7
Other grain	3.3	0.0	0.0	18.4	0.0	11.9	0.0	37.9	0.0	2.1	73.6
Total grain	434.8	135.9	151.5	311.6	112.0	739.9	351.2	818.6	157.7	205.7	3,418.9
Soybean meal	114.8	36.8	18.2	7.9	22.0	204.7	98.9	32.2	15.9	21.6	573.0
Other oil meals	0.1	0.7	0.0	0.0	0.0	0.0	0.8	3.4	0.1	5.8	11.0
Total meals	114.9	37.6	18.2	7.9	22.0	204.7	99.6	35.6	16.0	27.4	584.0
Corn gluten meal	44.6	0.1	0.6	0.0	0.0	2.5	0.9	2.2	0.0	0.8	51.7
Wheat millfeeds	12.2	0.8	0.0	0.2	0.0	0.0	0.0	19.3	26.0	7.6	66.1
Other millfeeds	36.4	2.7	6.4	0.7	0.7	8.6	6.6	0.0	5.2	8.3	79.6
Total grain byprod	93.2	3.6	7.0	0.9	0.7	11.1	7.5	21.5	31.2	16.7	193.4
Meat & bone meal	18.0	2.9	1.1	2.0	3.3	16.6	21.5	9.9	5.3	10.3	90.9
Fish meal	0.2	0.0	0.0	0.0	0.0	12.2	11.7	0.0	0.0	2.6	26.7
Poultry byproduct	26.2	0.0	0.0	0.0	0.0	40.9	4.8	0.1	0.0	0.0	72.0
Other animal protein	0.8	0.1	0.2	0.1	0.0	0.0	0.4	0.0	0.0	0.0	1.6
Total animal protein	45.2	3.0	1.3	2.1	3.3	69.7	36.4	10.0	5.3	12.9	191.2
Calcium	12.9	3.6	2.9	78.9	8.6	21.9	18.6	12.3	5.8	14.5	180.0
Phosphorus	3.4	0.8	0.6	45.7	1.9	11.2	2.3	0.8	0.6	0.2	67.6
Salt	3.7	1.3	0.2	0.3	1.6	5.0	2.0	0.9	0.9	0.7	16.5
Other minerals	1.4	1.7	0.1	0.1	0.2	3.3	0.7	0.0	0.2	0.0	7.9
Total minerals	21.4	7.4	3.8	125.0	12.3	41.4	23.6	14.0	7.5	15.4	272.0
Fats	8.6	0.0	0.4	0.6	0.0	20.9	8.8	0.5	1.2	3.5	44.5
Molasses	4.3	3.0	11.3	7.2	0.5	0.3	0.3	8.8	7.7	1.0	44.3
Alfalfa products	0.2	0.1	0.4	4.5	0.1	0.0	0.6	20.4	9.5	2.6	38.3
Other byproducts	0.3	0.2	0.4	0.0	0.0	0.1	0.0	2.0	0.4	1.3	4.9
Total byproducts	13.4	3.3	12.5	12.3	0.6	21.3	9.6	31.7	18.8	8.4	132.0
Total Microingredient	2.2	10.5	3.5	0.6	2.9	14.4	1.2	1.3	6.9	0.6	44.2
Total ingredients	725.2	201.3	197.9	460.5	153.9	1,102.6	531.0	932.8	243.3	287.1	4,835.6

- = Not available

Table 3: Broiler Ingredients, by region, 1984

	Northeast	Lake States	Corn Belt	Northern Plains	Appalachia	Southeast	Delta	Southern Plains	Mountain	Pacific	U.S.
Thousand tons											
Corn	564.1	-	50.0	-	941.4	1,914.8	935.0	245.5	-	632.4	5,283.2
Sorghum	0.0	-	100.0	-	1.0	163.6	246.1	128.3	-	20.0	659.1
Barley	9.6	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	9.6
Oats	0.6	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.6
Wheat	8.4	-	0.0	-	9.0	81.4	41.4	0.0	-	85.5	225.8
Other grain	0.0	-	0.0	-	0.0	0.0	7.5	0.2	-	18.6	26.4
Total grain	582.7	-	150.0	-	951.4	2,159.9	1,230.1	374.1	-	756.5	6,204.6
Soybean meal	169.7	-	50.0	-	331.7	617.5	359.3	101.7	-	162.2	1,792.0
Other oil meals	0.0	-	0.0	-	7.1	2.5	0.0	0.0	-	0.0	9.6
Total meals	169.7	-	50.0	-	338.8	620.0	359.3	101.7	-	162.2	1,801.6
Corn gluten meal	65.9	-	0.0	-	43.5	77.0	5.7	16.8	-	26.2	235.0
Wheat millfeeds	3.0	-	0.0	-	1.7	16.5	1.6	0.5	-	0.0	23.4
Other millfeeds	1.6	-	0.0	-	15.8	9.4	4.5	7.8	-	0.0	39.1
Total grain bypro	70.5	-	0.0	-	61.0	102.9	11.8	25.1	-	26.2	297.5
Meat & bone meal	35.8	-	1.0	-	12.6	51.9	46.1	4.2	-	67.2	209.9
Fish meal	13.4	-	1.0	-	47.5	53.4	42.6	19.6	-	89.0	255.6
Poultry byproduct	27.8	-	1.0	-	35.3	95.2	50.6	10.7	-	5.0	221.7
Other animal protein	0.5	-	1.0	-	6.9	52.3	6.0	3.3	-	32.0	102.0
Total animal protein	68.5	-	4.0	-	100.3	250.9	145.3	28.9	-	189.2	787.2
Calcium	7.5	-	0.0	-	9.5	20.3	17.2	4.7	-	6.6	65.8
Phosphorus	5.9	-	0.0	-	14.2	26.3	15.0	6.7	-	4.0	72.1
Salt	1.8	-	0.0	-	9.3	10.2	5.9	0.9	-	2.2	26.3
Other minerals	0.3	-	0.0	-	23.0	9.6	0.9	0.1	-	0.8	34.8
Total minerals	15.4	-	0.0	-	52.0	66.4	39.1	12.4	-	13.6	199.0
Fats	21.0	-	0.0	-	32.6	103.8	43.5	11.6	-	36.2	250.7
Molasses	0.3	-	0.0	-	5.7	0.7	0.0	0.0	-	0.0	6.8
Alfalfa products	1.3	-	0.0	-	0.0	0.1	0.0	0.0	-	0.5	1.9
Other byproducts	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Total byproducts	22.6	-	0.0	-	38.3	104.7	43.5	11.6	-	36.7	259.4
Total Microingredient	3.9	-	0.0	-	10.2	48.8	10.0	3.1	-	14.0	89.9
Total Ingredients	933.4	-	204.0	-	1,551.9	3,353.5	1,839.0	556.9	-	1,200.4	9,639.2

- = Not available.

Table 4: Turkey Ingredients, by region, 1984

	Northeast	Lake States	Corn Belt	Northern Plains	Appalachia	Southeast	Delta	Southern Plains	Mountain	Pacific	U.S.
Thousand tons											
Corn	15.0	182.8	128.1	7.8	214.8	29.1	-	2.6	8.0	-	580.2
Sorghum	0.0	0.0	9.0	0.0	11.0	1.7	-	60.9	35.9	-	126.5
Barley	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	2.2	-	2.2
Oats	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.1
Wheat	0.0	0.3	2.9	0.0	19.0	3.1	-	0.5	11.9	-	37.7
Other grain	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
Total grain	15.0	183.2	140.0	7.8	244.8	35.9	-	72.0	58.0	-	754.7
Soybean meal	6.0	497.8	55.8	2.6	101.3	13.9	-	29.1	20.2	-	726.7
Other oil meals	0.0	0.0	0.0	0.0	0.0	0.0	-	0.3	0.0	-	0.3
Total meals	6.0	497.8	55.8	2.6	101.3	13.9	-	29.4	20.2	-	727.0
Corn gluten meal	0.0	0.0	1.0	0.0	0.0	0.0	-	1.0	0.0	-	2.0
Wheat millfeeds	0.0	11.8	3.7	0.0	0.0	0.0	-	0.0	0.0	-	15.5
Other millfeeds	0.0	0.0	1.6	0.0	2.9	0.0	-	0.0	0.1	-	4.6
Total grain bypro	0.0	11.8	6.3	0.0	2.9	0.0	-	1.0	0.1	-	22.1
Meat & bone meal	0.0	24.9	13.7	0.7	1.2	2.2	-	10.7	4.1	-	57.5
Fish meal	0.0	0.2	0.2	0.0	7.6	0.0	-	0.5	0.0	-	8.5
Poultry byproduct	2.5	0.0	0.0	0.0	12.6	0.0	-	0.0	1.1	-	16.2
Other animal protein	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0
Total animal protein	2.5	25.1	13.9	0.7	21.4	2.2	-	11.2	5.2	-	82.2
Calcium	0.0	16.0	1.8	0.1	4.4	0.0	-	0.6	0.4	-	23.4
Phosphorus	0.0	4.8	2.3	0.1	7.0	1.7	-	1.6	0.0	-	17.5
Salt	0.1	1.3	0.8	0.0	2.4	0.3	-	0.4	0.3	-	9.5
Other minerals	0.0	9.6	0.1	0.1	1.7	0.3	-	0.2	0.0	-	7.9
Total minerals	0.1	27.7	5.0	0.3	15.5	2.2	-	2.8	0.7	-	54.3
Fats	0.0	10.4	6.1	0.6	17.7	2.2	-	50.4	1.8	-	89.2
Molasses	0.0	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.1
Alfalfa products	0.0	0.0	1.2	0.0	0.6	0.3	-	1.3	0.1	-	3.5
Other byproducts	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1	-	0.1
Total byproducts	0.0	10.5	7.3	0.6	18.3	2.5	-	51.7	2.0	-	92.8
Total Microingredient	0.0	1.2	0.6	0.1	7.1	0.3	-	0.2	0.4	-	9.9
Total Ingredients	25.6	757.2	228.9	12.0	411.3	55.0	-	168.4	86.7	-	1,743.1

- = Not available.

## EFFECTS OF INCREASED OATS IMPORTS ON THE U.S. MARKET AND GOVERNMENT PROGRAMS

Linwood A. Hoffman and Phil Sronce 1/

**ABSTRACT:** The United States became a net importer of oats during 1982-86, with imports ranging from 4 to 34 million bushels, mostly from Canada, Sweden, and Finland. As a result of increased imports, domestic supply increased modestly, producer prices declined slightly, and domestic feed use rose somewhat. Net Government program outlays for oats were estimated to increase by \$0.4-\$4.5 million annually. Government program objectives for oats were not significantly affected by the additional imports.

**Keywords:** U.S. oats market, Government feed grain program, world oats production and trade, oats imports.

### Introduction

Producers, consumers, and Government policymakers have become increasingly concerned about the rising level of U.S. oats imports. Several questions have been raised by these interested parties: How is it economically feasible to import oats when the United States has excess production capacity? How have these imports affected the domestic oats market and Government programs and their costs? In response to this concern, the Food Security Act of 1985 mandated that the Secretary of Agriculture conduct "a study of the impact of domestic farm programs of the increased importation of oats into the United States" (U.S. Congress).

Imported oats have been a relatively small percentage of total supply over the past 36 years, ranging from less than 1 percent to 5 percent (Hoffman and Livezey). However, imports increased from 3.9 million bushels in 1982 to an estimated 30 million in 1983, a rise of nearly sevenfold, and have remained near that level since 1983. Purchases of foreign oats in 1983-85 (27-34 million bushels) were about 4-5 percent of supply. Since 1982 the United States has been a net importer of oats, for the first time since the early fifties.

Imports into the United States during 1983-85 originated mostly from Sweden, Finland, and Canada. These imports were competitively priced, due in part to favorable transport rates, foreign subsidies, the strong U.S. dollar, and generally strong U.S. prices. The imported oats were also of good quality. For 1984-85, domestic oat production seemed adequate to handle domestic consumption, but world economic conditions permitted foreign oats to continue to be imported into the United States at competitive prices. However, during the 1983 and 1986 crop years oats were also imported to supplement a short domestic supply.

Oats are included in the Government feed grain programs. However, oat producers' participation in the program has not been great (14-37 percent during 1982-86). The reasons include large on-farm use of oats and lack of economic incentives for participation.

Importation of oats may lower domestic prices, raise stock levels, substitute foreign for U.S. oats in domestic consumption, and thus increase the cost of the Government program for oats. If import levels continue to rise, they could increasingly replace domestic production, despite overall excess production capacity in the United States. On the other hand, if the domestic oats program or programs for other crops implicitly provide disincentives to oats producers, imports could help provide users with necessary supplies.

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The objective of this analysis is to assess the impact of increased oats imports on the domestic market and Government programs for U.S. oats. The primary focus is to examine effects on domestic production, consumption, and prices and how these factors affect the achievement of Government program objectives and costs.

### Analytical Framework

The analysis is based on crop years 1983-86, a period when U.S. imports were relatively high. During this period, oats imports ranged from 28 to 34 million bushels per year, considerably above the 1-4 million bushels of the late 1950's through the early 1980's (Hoffman and Sronce).

The impact of increased oats imports was analyzed by comparing two different import scenarios:

- o The base import scenario.—This consists of actual supply, use, price, and Government outlays (as reflected by loan activity, direct payments, and inventory management costs of the Commodity Credit Corporation (CCC)) for 1983-86. The supply level includes actual imports, which were higher than normal.
- o The historical import scenario.—This scenario assumes oats imports remained a constant 2 million bushels a year, the average for 1978-82, and estimates the effect on production, use, price, and Government outlays for 1983-86.

The variables were estimated for the historical import scenario based on assumptions, elasticities, and judgment. A reduced form price equation was estimated to compute price effects for this analysis. This equation was based on annual data for 1977-86. The oats farm price was expressed as a linear function of the corn farm price and ending stocks of oats. Demand elasticities used for this analysis were as follows: feed, -1.1; food, -0.08; and seed, -0.05. Secondary data were used from various USDA sources.

The historical import scenario had the following similarities to or differences from the base import scenario:

- o Government program parameters were assumed similar for both scenarios.

- o Planted and harvested acres, yield, and production for the 1983 and 1984 crop years were similar for the two scenarios. For 1983, producers would have been unaware of import changes at planting time. For the 1984 crop, participant net returns (revenue above variable costs) compared with that of nonparticipants was about the same for both scenarios.
- o For the 1985 and 1986 crop years, program participation was lowered slightly and acres planted and harvested and production were raised slightly under the historical import scenario because of marginally higher prices for 1984 and 1985. Average yields were lowered slightly because of increased harvested acres.

### Effects of Increased Imports

Because oats imports increased during 1983-86 over 1978-82 historical levels, domestic oats supply was estimated to increase and producer prices to decline slightly. As a result of lower prices, feed use of oats increased. Government outlays were estimated to increase slightly due to greater program activity caused by lower prices.

### *Supply, Use, Price, and Government Outlays*

Production levels for the base (actual) import scenario declined gradually except in 1985 (table 1). The production surge in 1985 was due to yields; acreage harvested was identical to 1984. In 1986, production dropped to a record low, a decline of 18 percent from 1985. This drop resulted from decreases in both harvested acreage and yield. Weather hurt yields and less area was harvested because of lower prices; price dropped by 26 percent between 1984 and 1985.

For the historical scenario, production exhibited a pattern similar to the base import scenario (table 1). However, production for the historical import scenario was estimated to be slightly higher than the base scenario for most years, due in part to higher prices. Although domestic production was greater for most years under the historical import scenario, it was not large enough to compensate for the drop in imports and lower beginning stocks. Thus, total annual supplies

Table 1. Comparison of oats supply, use, and price under the actual and historical import scenarios, by crop year 1/

Item	Units	1982	1983		1984		1985		1986 4/	
			Base 2/	Historical 3/	Base	Historical	Base	Historical	Base	Historical
Harvested acres	Mill.	10.3	9.1	9.1	8.2	8.3	8.2	8.3	6.9	7.0
Production	Mill. bu.	593	477	477	474	481	521	528	305	391
Imports	"	4	30	2	34	2	28	2	30	2
Supply	"	749	727	699	689	645	729	680	598	550
Domestic use	"	526	544	535	508	494	544	523	485	459
Use	"	529	546	537	509	495	546	523	487	459
Ending Stocks	"	220	181	162	180	150	184	157	111	91
Season average price	\$/bushel	1.49	1.67	1.70	1.69	1.75	1.25	1.30	1.10	1.15

1/ Data for the base import scenario are based on World Agricultural Supply and Demand Estimates, January 15, 1987.

2/ Represents actual oats imports, production, use, price, and Government outlays.

3/ Represents historical oats imports, 1978-82, and estimated production, use, price, and Government outlays.

4/ Preliminary.

were larger under the base import scenario than under the historical, ranging from 28 million to 49 million bushels greater per year, a 4- to 9-percent increase (table 1).

Crop year prices were 3-6 cents a bushel lower under the base import scenario than under the historical, or 2-4 percent lower per year. Changes in ending stocks were similar under the two scenarios, although ending stocks were lower with the historical.

Under the base import scenario, domestic feed use was 9-26 million bushels a year larger than under the historical scenario, or 2-6 percent annually. The larger consumption level was due to higher supplies and lower prices than under the historical alternative.

Feed use declined between 1985 and 1986 under both scenarios. This would be considered a peculiar situation because price also declined; normally use rises with a decline in price. This relationship is explained by the lowering of feed grain loan rates as permitted by the 1985 Food Security Act, by the implementation of generic certificates for the 1986 crop year, and by the large drop in the availability of oats.

Price support loans made under the two scenarios followed a similar pattern, moving inversely with price, with lowest placements being made in 1985, the year with the highest prices during the period (table 2). With larger supplies available under the base import scenario, loan placements were larger in 1985

and 1986 than under the historical alternative, but during 1984 and 1983 placements were the same for both scenarios.

Price support loans made for a given level of program participation and production are a function of the market price in relation to the loan rate and expected price movements for the season. The loan rate serves as a price floor for the eligible producer when prices are below the loan rate by more than the cost of storing the commodity. The producers' best alternative is to place the grain under loan and monitor prices during the loan period with the objective of paying off the loan if market prices rise above the loan redemption price. In situations where the market price is above the loan rate at harvest, and price expectations are high (that is, price will rise during the season by more than carrying costs), placing oats under loan at harvest may be a rational decision.

Loans repaid, under both scenarios, moved directly with price. With slightly higher prices for the historical scenario in 1985, more loans were repaid than under the base import scenario. In 1984, regardless of scenario, loans repaid exceeded loans made by about 70 percent, resulting in net receipts to CCC. This situation occurred for either scenario when prices increased by 12-14 percent from the previous year.

Net Government outlays were greater by \$0.4 million to \$4.5 million annually under the base import scenario than under the historical

Table 2. Comparison of CCC net outlays for oats with the base and historical import scenarios, by fiscal year

Item	1983		1984		1985		1986		Total	
	Base 1/	Histor- ical 2/	Base	Histor- ical	Base	Histor- ical	Base 3/	Histor- ical	Base	Histor- ical
	\$ million									
Loans made	8.9	8.9	5.3	5.3	4.3	3.6	8.1	6.4	26.6	24.3
Loans repaid	3.8	3.8	9.0	9.0	3.4	3.6	1.2	1.8	17.4	18.4
Net loans	5.1	5.1	(3.7)	(3.7) 4/	.9	0	6.9	4.6	9.2	5.9
CCC & FOR 5/ storage	1.0	1.0	.7	.7	.7	.7	1.6	1.4	4.0	3.8
Deficiency	1.6	1.2	3.4	2.5	0	0	17.2	15.3	22.2	19.0
Diversion	3.3	3.3	4.2	4.2	0	0	0	0	7.5	7.5
CCC sales 5/	0	0	(.1)	(.1)	(.2)	(.2)	(1.2)	(1.3)	(1.5)	(1.6)
Total	11.0	10.6	4.5	3.6	1.4	.5	24.5	20.0	41.4	34.6

1/ Represents actual oats imports, production, use, price, and Government outlays.

2/ Represents historical oats imports, 1978-82, and estimated production, use, price, and Government outlays.

3/ Preliminary.

4/ Parentheses represent net receipts.

5/ CCC = Commodity Credit Corporation. FOR = Farmer-owned reserve.

Table 3. Level and variability of season average prices and income under the base and historical import scenarios, by crop years

Import scenario	1983	1984	1985	1986	Coefficient of variation 1/
Season average price					
	\$ /bushel				Percent
Base 2/	1.67	1.69	1.25	1.10	20.9
Historical	1.70	1.75	1.30	1.15	20.1
Gross income: 3/					
	\$ million				Percent
Base	808	798	660	499	21.0
Historical	821	839	695	512	21.0

1/ A measure of variation which divides the observations' standard deviation by the mean.

2/ Data for the base scenario are based on World Agricultural Supply and Demand Estimates, January 15, 1987.

3/ Value of production and Government payments.

(table 2). Total net outlays for the base scenario during 1983-86 were estimated to be about \$7 million greater than the historical import scenario, a 20-percent rise. Deficiency payments accounted for more than 60 percent of the difference between each scenario's net outlays.

#### Government Program Objectives

The objectives of the Government oats program are to stabilize, support, and protect farm income and prices; to assist in maintaining balanced and adequate supplies of

food, feed, and fiber; and to aid in the orderly marketing of farm commodities.

#### Stabilize, Support, and Protect Prices and Income

Increased imports of oats during 1983-86 had little effect on price or income stability, although income and prices were slightly higher under the historical scenario (table 3). The coefficient of variation (a measure of variation which divides the observations' standard deviation by their mean) for the season-average price was an estimated 20.1

Table 4. Comparison of the stocks-to-use ratio with the base and historical import scenarios, by crop year

Import scenario	1983	1984	1985	1986
	Percent			
Base	33.2	35.4	33.7	22.8
Historical	30.2	30.3	30.0	19.8

percent for the historical import scenario and 20.9 percent with the base import scenario. The coefficient of variation for gross income as measured by value of production and Government payments was 21 percent under each alternative. Despite a lower level of gross income under the base import scenario, deficiency payments were generally greater with this alternative than with the historical scenario.

Although income and prices are partially supported under each scenario, the low level of program participation by producers minimizes these support effects. In 1983 and 1984, the prices in each scenario were substantially above the loan rate of \$1.36 and \$1.31 a bushel. In 1985, prices for both alternatives dropped below the loan rate of \$1.31. In 1986, they rose above the \$.99 loan rate by \$0.10-0.15 per bushel.

#### *Assist in Maintaining Balanced and Adequate Supplies*

Larger oats imports appear to have increased supply and disappearance more than historical import levels would have (table 4). Annual stocks-to-use ratios ranged from 0.198 to 0.303 with the historical import scenario, compared with a range of 0.23 to 0.33 with the base import alternative. Under the historical scenario, the 1986 stocks-to-use ratio was estimated at a 37-year low of 0.198, while the actual ratio was 0.23, the lowest since 1956. For either alternative, prices dropped from the previous year, but they were lowest with the base import alternative. Regardless of the scenario, the stocks-to-use ratio for 1986 will be low because of a small supply caused by a short domestic crop (accompanied by quality problems) and a tighter world trade market.

#### *Aid in Orderly Marketing*

Increased imports did not appear to change producers' marketing patterns substantially, because prices did not change that much from the estimated levels under the historical scenario. Any storage disincentive caused by the slight price decline could be offset by an increase in price support loan activity.

#### *Summary and Conclusions*

Although Government programs for oats provided minor support to prices and income, the effects of the common oats and barley acreage base since 1982 are important. Recently acreage has shifted from oats to barley because of higher net returns caused, in part, by Government programs. As the domestic supply of oats has declined, producer prices have strengthened, making imports more attractive. To the extent that program provisions have provided disincentives for oats production, oats imports have served as a counterbalancing force.

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# MARKETING AND PRICING METHODS USED BY MIDWESTERN CORN PRODUCERS

by

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**Abstract:** The 1983 Cost of Production survey provides information concerning the marketing methods and pricing strategies used by 750 Midwestern corn producers during the 1983 crop year. Respondents indicated that on-farm storage was the predominant handling method used at harvest. For corn sold off the farm, forward contracts and cash-market offers were widely used. Only minimal use was made of futures markets. The marketing channels used by producers, although reflecting available outlets, were dominated by sales to country and terminal elevators.

**Keywords:** Corn marketing, marketing methods, pricing strategies, marketing channels.

## Introduction

Uncertain market demands, erratic yields, and the effects of Government programs can cause sharp fluctuations in corn prices. The grain industry offers a variety of alternatives that farmers can use to market their crops, to reduce price risk, and perhaps to enhance returns. This article analyzes producer use of these disposition methods, pricing arrangements, and marketing channels. It focuses on the strategies of Midwestern corn producers during the 1983 crop year.

Factors specific to 1983 may have critically affected producer decisionmaking. The crop year was characterized by low supply and relatively large demand. The combined effects of a 29-percent drop in harvested acreage, primarily the outcome of the PIK program, and the summer drought reduced the corn supply to the lowest level since 1977. Meanwhile, total use for the September–November quarter of 1983 was near a record high. Producers' early optimism concerning prices was realized as stocks dwindled and demand remained strong (6).

## Survey Methods

The information summarized in this article is based on data collected from the

1983 Cost of Production survey of field crop producers conducted for the Economic Research Service (ERS) by the Statistical Reporting Service (now the National Agricultural Statistics Service). The survey collected information on production costs, production technology, crop disposition, pricing mechanisms, storage arrangements, and transportation methods. The survey of 1983 practices was conducted in the spring of 1984, and sampled the Northeast, Lake, Corn Belt, Northern Plains, and Mountain States. A similar study was conducted in 1983, and gathered data on 1982 marketing and pricing practices in selected Southern States (3). Although data on costs and production technology are collected annually, 1982 and 1983 are the only survey years for which marketing and pricing practice data are available.

The corn-marketing strategies addressed in this study relate to practices in the Corn Belt (Illinois, Indiana, Iowa, Missouri, Ohio); the Lake States (Michigan, Minnesota, Wisconsin); and the Northern Plains (Kansas, Nebraska, and South Dakota). The sampling procedure used to select producers was based on the "probability-proportionate-to-size" technique. This article focuses on the proportion of the respondents' production which was marketed and priced by the various methods, rather than the share of producers using a particular method.

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Table 1 indicates the number of corn producers surveyed, the average cropland acreage per respondent, and the importance of corn on the survey farms. The average acres of cropland operated by the 750 respondents ranged from 417 acres in Wisconsin to 1,453 acres in Kansas. The average acres devoted to corn production varied from 133 acres in Missouri to 404 acres in Nebraska. Twenty-five percent or less of the cropland operated by respondents in Kansas, Missouri, and South Dakota was devoted to corn, while corn accounted for 45 percent or more of the acreage on farms in Illinois, Indiana, and Nebraska.

### Marketing Methods

Survey respondents were asked what proportion of their crop was disposed of at harvest using each of the following methods: direct sales from the field; delivery to off-farm destinations; and hauling to on-farm storage. Hauling to on-farm storage at harvest was the predominant handling method in all Midwestern States (table 2). The average share handled by this method ranged from 51.6 percent in Kansas to 81.6 percent in Iowa. Producers may have had space to store relatively more corn on their farms because the 1983 crop was significantly smaller than in previous years. On-farm storage clearly has become an important outlet at harvest: about 90 percent of all producers surveyed had on-farm storage, averaging about 65,000 bushels per farm.

In addition, a substantial portion of corn production was delivered off-farm at harvest. These deliveries were lowest in Iowa, Minnesota, and Wisconsin, at approximately 18 percent of the crop. This is consistent with the relatively high livestock-feeding levels (5) and the low levels of production relative to on-farm bin capacity in these States. 2/ Although feeding is also important in Kansas, the wheat crop competes for bin space, and a maximum 47.4 percent of corn sales was delivered off-farm.

2/ To obtain an estimate of the State ratio of production relative to on-farm bin space, the State production of all grains (5) was divided by the average on-farm bin space reported by survey respondents, for each State. The estimates are consistent with those reported in (2).

Table 1.—Number and size of corn farms surveyed, average acres of cropland, and importance of corn on survey farms, Midwestern States, 1983 crop

State	Farms : in : survey :	Average : acres : of : cropland	Average : acres : of : corn	Corn's : share : of : cropland
	Number	Acres	Acres	Percent
IL	97	705	325	46
IN	52	656	295	45
IA	90	523	218	42
KS	87	1,453	297	20
MI	41	571	236	41
MN	63	618	174	28
MO	44	595	133	22
NE	108	876	404	46
OH	56	751	265	35
SD	56	657	164	25
WI	56	417	151	36

Table 2.—Proportion of corn production handled by alternative methods, Midwestern States, 1983 crop

Disposition method			
State	Sold : direct : from : farm :	Delivered : to : off-farm : destination :	Haul : to : on-farm : storage
Percent of production			
IL (97) <sup>1/</sup>	0.7 (1) <sup>2/</sup>	35.5 (59) <sup>2/</sup>	63.8 (76) <sup>2/</sup>
IN (52)	0.2 (1)	38.1 (26)	61.7 (36)
IA (90)	0.2 (1)	18.2 (32)	81.6 (83)
KS (87)	1.0 (2)	47.4 (56)	51.6 (55)
MI (41)	0.0 (0)	42.0 (19)	58.0 (26)
MN (62)	1.6 (1)	18.4 (18)	80.0 (53)
MO (44)	2.3 (1)	21.0 (13)	76.7 (35)
NE (108)	0.9 (3)	19.9 (43)	79.2 (98)
OH (55)	1.8 (1)	29.4 (28)	68.8 (46)
SD (56)	1.7 (1)	27.9 (24)	70.4 (43)
WI (56)	1.1 (3)	17.4 (16)	81.5 (49)

<sup>1/</sup>Number of producers responding in each State.

<sup>2/</sup>Number of producers that reported using method.

Table 3.—Disposition of corn delivered to off-farm destinations at harvest, Midwestern States, 1983 crop

	Disposition method		
State	Dried and returned to farm	Sold	Placed in commercial storage
Percent of deliveries			
Illinois	0.8	54.2	45.0
Indiana	1.3	66.1	32.6
Iowa	8.7	47.0	44.3
Kansas	0.0	53.2	46.8
Michigan	0.0	46.7	53.3
Minnesota	0.5	77.3	22.2
Missouri	0.0	68.9	31.1
Nebraska	0.0	65.5	34.5
Ohio	0.4	61.6	38.0
S. Dakota	9.0	71.3	19.7
Wisconsin	10.3	69.6	20.1

Table 4.--Disposition of corn stored on-farm following harvest, Midwestern States, 1983 crop<sup>1</sup>

State	: Delivered : : to : : CCC :	: Fed : : to : : livestock :	: Remains : : in : : storage :	: Sold
Percent of stocks				
Illinois	0.0	15.6	38.6	45.8
Indiana	0.0	31.3	34.0	34.7
Iowa	0.0	32.2	38.5	29.3
Kansas	0.0	23.2	44.5	32.3
Michigan	2.1	37.2	50.7	10.0
Minnesota	0.0	28.5	54.4	17.1
Missouri	0.0	71.1	19.3	9.6
Nebraska	0.6	25.2	43.2	31.0
Ohio	0.0	25.8	36.9	37.3
S. Dakota	0.0	34.4	46.5	19.1
Wisconsin	0.0	36.3	48.4	15.3

<sup>1</sup>Data represents the time span from harvest to the spring date on which producers responded to the survey.

Few Midwestern producers sold corn directly from the field to grain dealers. Grain dealers haul the crop directly from the field to processors or terminal elevators, most often in areas which lack a well-established local market (7). In total, 15 producers reported that a portion of their crop was sold at harvest using this method; the maximum share was 2.3 percent.

#### *Disposition of Corn Delivered Off-Farm at Harvest*

Producers indicating off-farm deliveries at harvest were asked about the disposition of the crop (reported in table 3). The predominant share of the corn crop was sold at harvest in most Midwestern States. The share of corn deliveries sold was lowest, about 47 percent, in Iowa and Michigan, where storage is relatively important. The largest portion of corn deliveries sold, at 77.3 percent, was in Minnesota, where commercial storage was reported as relatively unimportant and on-farm storage was common.

Deliveries placed in commercial off-farm storage ranged from about 20 percent in South Dakota and Wisconsin to 53.3 percent in Michigan. At least 45 percent of off-farm deliveries were placed in commercial storage facilities in Illinois, Kansas, and Michigan, where on-farm storage capacity is in relatively short supply, particularly in the former two States. Less than 25 percent of off-farm deliveries moved into off-farm storage in Minnesota, South Dakota, and

Wisconsin, where the ratio of on-farm bin capacity to production is somewhat larger.

Only a small portion of off-farm deliveries was dried and returned to the farm. Corn deliveries handled by this method were largest in Iowa at 8.7 percent, South Dakota at 9.0 percent, and Wisconsin at 10.3 percent. These States have relatively high feeding rates and, except in South Dakota, respondents reported storing a relatively large proportion of their crop on-farm.

#### *Disposition of Corn Hauled to On-Farm Storage*

Respondents who indicated that they hauled corn to on-farm storage at harvest were asked a follow-up question on the disposition of this grain as of the spring date in 1984 when they answered the survey. Table 4 indicates that producers who stored corn on farms in Illinois, Indiana, and Ohio had sold the largest percentage by this time. Sales to off-farm locations were less than 20 percent in Michigan, Minnesota, Missouri, South Dakota, and Wisconsin, and may indicate the ownership of sizable livestock operations by respondents in these States.

Of all respondents, those in Michigan, Minnesota, South Dakota, and Wisconsin reported holding the largest share of their corn crop in on-farm facilities at the time of survey, about 50 percent in each State. About 40 percent of the crop remained in on-farm storage in Illinois, Iowa, Kansas, Nebraska, and Ohio.

In Missouri, respondents indicated that the largest portion, 71.1 percent, of their on-farm crop was fed to livestock. Less than 40 percent of the corn stored on farms was fed to livestock in the remaining Midwestern States.

Respondents in Michigan and Nebraska reported that a small portion of the on-farm corn crop was delivered to the CCC, at 2.1 and 0.6 percent, respectively. Deliveries to the CCC were not reported in any other Midwestern States.

#### *Pricing Strategies*

Producers were asked to identify the percent of their crop that was priced using

forward contracts, cash-market offers, and price-later contracts. Responses are categorized in tables 5 through 7.

Each pricing mechanism has special features. When the forward contract is used, the following pricing aspects are determined prior to delivery: the quantity to be delivered; the approximate delivery date; and the price to be received at delivery. The cash-market offer includes all sales in which the local cash bid price on the date of delivery is the price received by the seller. When the price-later contract is used, the title to the grain is passed to the buyer at the time of delivery, but the selling price is determined later. A termination date indicating the latest date of pricing is usually agreed upon when the grain is delivered (7).

Price-later contracts include both "deferred price" and "basis" arrangements. When "deferred price" contracts are used, the seller decides when the sales price is determined, informs the buyer, and is then paid the cash bid price quoted that day. When "basis contracts" are used, the basis is agreed upon in advance of the producer's pricing date, and is specified relative to a futures contract. If the contract specifies a \$0.30-per-bushel differential below the March futures price, for instance, the producer can sell at any time, but the price that he receives will be \$0.30 below the Chicago Board of Trade's March corn quote on the date he chooses to sell (7).

#### *Pricing Direct Sales from the Field*

Survey respondents used cash sales and forward contracts to price the portion of their corn crop which was sold directly from the field (table 5). Price-later contracts were not used by any of the respondents, indicating that this pricing mechanism was perhaps not offered by grain dealers. It is difficult to generalize about pricing practices, however, because only 15 of 750 respondents used this disposition method.

#### *Pricing Corn Sold at Harvest*

The mechanisms used in pricing corn sold at harvest emphasized forward contracts and cash-market sales (table 6). Respondents indicated that the two methods were used with nearly equal frequency in Illinois, Minnesota, and Ohio. The forward contract was used

Table 5.--Methods used to establish the price received for corn sold directly from the field at harvest, Midwestern States, 1983 crop<sup>1/</sup>

State	Pricing method		
	Forward	Cash-market	Price-later
	: contract	: offer	: contract
Percent of sales			
Illinois	100.0	0.0	0.0
Indiana	0.0	100.0	0.0
Iowa	100.0	0.0	0.0
Kansas	100.0	0.0	0.0
Michigan	0.0	0.0	0.0
Minnesota	0.0	100.0	0.0
Missouri	0.0	100.0	0.0
Nebraska	5.3	94.7	0.0
Ohio	50.0	50.0	0.0
S. Dakota	0.0	100.0	0.0
Wisconsin	0.0	100.0	0.0

<sup>1/</sup>Because few producers sold corn directly from the field, caution should be used in making generalizations. (See table 2.)

Table 6.--Methods used to establish the price received for corn sold off-farm to buyers at harvest, Midwestern States, 1983 crop

State	Pricing method		
	Forward	Cash-market	Price-later
	: contract	: offer	: contract
Percent of sales			
Illinois	52.2	46.6	1.2
Indiana	32.6	65.7	1.7
Iowa	61.0	28.5	10.5
Kansas	11.7	62.4	25.9
Michigan	11.7	88.3	0.0
Minnesota	52.5	47.5	0.0
Missouri	21.5	78.5	0.0
Nebraska	27.9	66.0	6.1
Ohio	51.8	46.8	1.4
S. Dakota	30.2	69.8	0.0
Wisconsin	29.9	70.1	0.0

Table 7.--Methods used to establish the price received for corn sold from on-farm storage, Midwestern States, 1983 crop

State	Pricing method		
	Forward	Cash-market	Price-later
	: contract	: offer	: contract
Percent of sales			
Illinois	53.4	38.8	7.8
Indiana	47.2	42.3	10.5
Iowa	39.7	55.4	4.9
Kansas	23.3	75.5	1.2
Michigan	53.6	46.4	0.0
Minnesota	61.0	36.6	2.4
Missouri	0.0	100.0	0.0
Nebraska	36.9	59.3	3.8
Ohio	56.2	30.6	13.2
S. Dakota	20.6	79.4	0.0
Wisconsin	42.9	47.5	9.6



most commonly in Iowa, while the respondents in the remaining Midwestern States indicated that cash-market sales were the predominant pricing method.

Price-later contracts were not used frequently in most Midwestern States to price corn sold at harvest. Price-later contracts were used in 25.9 percent of Kansas sales and in 10.5 percent of Iowa sales, but the average in each of the remaining States was less than 6.1 percent of sales. Respondents in Michigan, Minnesota, Missouri, South Dakota, and Wisconsin reported no use of price-later contracts. Given the price increases expected throughout the year, producers' demand for price-later contracts should have been large in 1983 relative to other crop years.

#### *Pricing Corn Sold from On-Farm Storage*

Forward contracts and cash-market sales also were used most frequently to price corn sold from on-farm storage (table 7). The forward contract was used most frequently in Illinois, Indiana, Michigan, Minnesota, and Ohio, while cash-market sales were most commonly used in the remaining Midwestern States.

Price-later contracts were not often used to price corn sold from on-farm storage in the Midwest. Respondents from Illinois, Indiana, Ohio, and Wisconsin priced the largest portion of their corn crop using this method, at only 7.8, 10.5, 13.2, and 9.6 percent, respectively. Respondents in other Midwestern States reported that less than 5 percent of their corn crop was priced this way.

#### *Futures Markets as a Pricing Mechanism*

Producers may wish to take advantage of alternative opportunities once they have determined a primary pricing mechanism. Those who use cash forward contracts, for instance, are concerned that increasing prices will result in missed returns, and may buy futures contracts for protection. Other producers are concerned about price declines, and may sell futures contracts to offset this risk if prices are moving downward. These producers include those who store on farms throughout the year, participate in an anticipatory hedge program, or use price-later contracts.

A relatively low percentage of the respondents' corn crop was priced using these futures strategies: 18 percent of production in Illinois; 22 percent in Indiana; 17 percent in Ohio; and 17 percent in Wisconsin. The percentage of production which was priced using futures strategies was minimal in the remaining Midwestern States. Some respondents may use futures markets heavily, others not at all, and the average share of production priced using futures is depressed to a fairly low level. These data, reflecting low levels of producer use of futures markets, are consistent with those reported in (1) and (4).

The ways producers used futures markets, categorized by size of operation, are given in table 8. In all Midwestern areas, use of the planting time hedge appears less common than placement of hedges over the summer months. The practice of hedging stored grain is fairly common among those responding, as is special trading to offset adverse price movements when contracting methods are used. Use of futures as a marketing tool appears independent of operation size, although the small number of respondents, approximately 10 percent of those surveyed, makes it difficult to generalize about the use of alternative futures strategies.

#### *Marketing Channels*

Over 60 percent of the respondents' corn marketings were channeled through country elevators in Illinois, Iowa, Michigan, Minnesota, Nebraska, and South Dakota (table 9). Terminal elevators were used to a large extent in Indiana, with a 36.5-percent share of the marketed crop; Michigan, with 26.1 percent; and Ohio, with 33.4 percent. River elevators were an important market channel in the Mississippi River Basin, accounting for 24.6 percent of sales in Illinois, 10.3 percent in Indiana, 11.2 percent in Missouri, 18.4 percent in Ohio, and 11.4 percent in Wisconsin.

The use of marketing channels is influenced by available outlets. Cattle feeding is a primary activity in Missouri and Kansas: 66.6 percent of sales moved to other farmers in Missouri, and 48.4 percent was channeled to feedlots in Kansas. More than 50 percent of deliveries in Wisconsin moved to grain dealers, indicating that well-established local markets, such as country elevators, may

not have been available to respondents. Movements to processors accounted for less than 4 percent of sales in all Midwestern States.

### Summary and Conclusions

On-farm storage is an important outlet at harvest, and appeared to be the predominant handling method for corn producers surveyed in all Midwestern States. A substantial portion of corn production was also delivered off-farm at harvest, of which most was sold to buyers. Few of the Midwestern producers surveyed sold directly from the field to grain dealers.

The Midwestern corn producers surveyed appeared aware that routine cash-market sales may not provide either the income stability or level necessary to maintain cash-flow requirements. Respondents indicated that forward contracts were used to price a larger percentage of the 1983 corn crop in some States than were cash market offers. Producers also indicated direct use of

futures markets in some cases, either for hedging purposes or to offset risks associated with other contracting methods. Price-later contracts appear to be relatively unimportant.

The marketing channels used by producers reflect available outlets. Country elevators represent the predominant marketing channel in the primary corn-producing States, handling about 60 percent of the marketed crop. Sales to feedlots, other farmers, and grain dealers appear relatively more important outside these States. Both river and terminal elevators appear important in the Mississippi River basin.

Each crop year is unique, and the 1983 results are not necessarily representative of other years. The high prices and tight supplies characterizing the 1983 crop year suggest that corn stockholding and the use of price-later contracts may have been more important than in other years. Additional research is needed to indicate the use of alternative marketing and pricing methods in other crop years, and to indicate the impact of options on producers' marketing and pricing decisions.

Table 8.—Number of farms trading in futures contracts by method and volume of production, Midwestern States, 1983 crop

Volume of production 1,000 bu.	Total farms	Hedge before planting	Hedge during season	Hedge stored grain	Special trading 1/	Percent of sales priced by futures
Number of farms						
Percent						
Corn Belt						
0-5.99	5	0	5	1	1	34.0
6-14.99	9	5	6	2	3	58.3
15-39.99	16	7	12	8	6	60.3
40-74.99	6	3	5	3	3	43.3
75-149.99	3	3	3	2	2	48.3
150 +	1	1	1	0	0	50.0
Lake States						
0-5.99	1	1	1	1	1	10.0
6-14.99	3	1	1	0	1	60.0
15-39.99	4	2	3	0	0	48.5
40-74.99	3	3	3	3	2	53.3
75-149.99	2	1	2	1	1	55.0
150 +	0	0	0	0	0	0.0
Northern Plains 2/						
0-5.99	1	0	0	0	1	67.0
6-14.99	2	0	1	1	1	25.0
15-39.99	3	0	3	1	0	76.7
40-74.99	3	2	2	0	1	45.0
75-149.99	5	3	4	2	4	51.0
150 +	4	3	2	0	1	72.5

1/ Allows producer to hedge against adverse price moves when other contracting methods are used.

2/ Includes survey responses from North Dakota.

Table 9.—Marketing channels used by corn producers,  
Midwestern States, 1983 crop

State	Marketing channel						
	Country elevators	Terminal elevators	River elevators	Other farmers	Grain dealers	Feed lots	Proc- essors
Percent of sales							
Ill. (50) <sup>1/</sup>	60.9	6.9	24.6	2.4	4.6	0.0	0.6
Ind. (20)	35.6	36.5	10.3	9.6	0.0	8.0	0.0
Iowa (41)	78.8	5.6	8.5	2.9	4.2	0.0	0.0
Kan. (25)	11.4	1.6	0.0	16.9	18.0	48.4	3.7
Mich. (4)	65.2	26.1	8.7	0.0	0.0	0.0	0.0
Minn. (18)	65.2	3.1	2.8	9.5	7.8	10.5	1.1
Mo. (7)	22.2	0.0	11.2	66.6	0.0	0.0	0.0
Nebr. (54)	68.3	8.8	0.0	4.2	4.0	14.7	0.0
Ohio (23)	34.9	33.4	18.4	5.8	0.9	6.6	0.0
S.D. (14)	88.8	6.4	0.0	2.3	0.0	2.5	0.0
Wisc. (20)	24.6	5.2	11.4	5.8	50.3	0.0	2.7

<sup>1/</sup> Number of producers responding in each State.

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Table 1.--Feed grains: Marketing year supply, (

Year 2/	Supply					Domestic	
	Begin- ning stocks	Produc- tion	Imports	Total	Food, alcohol, and industrial	Se	
1982/83	78.0	250.2	0.3	328.5	26.5		MI
1983/84	108.6	136.4	0.7	245.7	28.3		
1984/85	39.6	236.9	0.8	277.3	30.6		
1985/86	57.5	274.4	0.9	332.8	33.5		
1986/87	126.3	252.4	0.7	379.4	34.3		
1987/88 4/	153.5	219.9	0.7	374.1	--	36.2	--
	Area						
	National program	Set-aside and diverted		Planted			
	----- Million hectares -----						
1982/83	---	1.3		49.1			
1983/84	---	15.9		41.6			
1984/85	---	2.1		49.5			
1985/86	---	2.9		51.8			
1986/87	---	7.3		48.5			
1987/88	---	11.7		43.2			

1/ Aggregated data on corn, sorghum, barley, and oats. 2/ Marketing year supply. 3/ Includes total Government loans (original and resale) and disaster payments. 4/ Deficiency and diversion payments. 5/ Deficiency payments.



Supply, disappearance, area, and prices, 1982/83-1987/88 1/

Disappearance				Ending stocks			
Domestic use	:	:	:	Total	:	Privately	:
:	Feed	:	Exports	disap-	Govt.	owned	Total
d : Seed	and	Total	:	pearance	owned	3/	:
:	residual	:	:	:	:	:	:

Million metric tons

1.4	139.0	166.9	53.0	219.9	33.5	75.1	108.6
1.5	119.7	149.5	56.6	206.1	8.0	31.6	39.6
1.5	131.1	163.2	56.6	219.8	8.9	48.6	57.5
1.5	134.9	169.9	36.6	206.5	20.4	105.9	126.3
1.2	143.6	179.1	46.8	225.9	51.1	102.4	153.5
2 - -	144.5	180.7	49.1	229.8			144.3

		Yield	:	Index	:	Government-
		per	:		:	support program
:	Harvested	harvested	:	Average price	:	Total
:	for	hectare	:	received by	:	payments to
:	grain	:	:	farmers 5/	:	participants

- - - - -	Metric tons	1977=100	Million dollars
42.9	5.83	130	6/ 419
32.5	4.20	156	7/ 1,103
43.2	5.48	130	8/ 1,860
45.1	6.07	108	8/ 2,785
41.3	6.11	78	7/ 7,323
35.4	6.21		7/ 8,755

Marketing year beginning September 1 for corn and sorghum; June 1 for oats (resale). 4/ Projected. 5/ Excludes support payments. 6/ Deficiency and Deficiency payments.



Table 2.—World coarse grains: Supply and disappearance, 1975-76 - 1987/88 1/

Year	Beginning stocks	Production	Disappearance		Trade 2/	Ending stocks
			Feed	Total		
Million metric tons						
1975/76	66.7	646.0	378.1	645.2	75.2	65.2
1976/77	65.2	704.8	403.3	685.1	83.9	85.1
1977/78	85.1	701.5	410.8	691.1	88.8	95.4
1978/79	95.4	755.1	448.7	746.8	92.7	103.6
1979/80	103.6	744.4	454.2	743.8	99.2	104.1
1980/81	104.1	732.0	435.2	743.9	107.8	92.4
1981/82	92.4	766.3	444.2	738.2	96.6	120.4
1982/83	120.4	784.2	460.3	752.8	89.9	151.9
1983/84	151.9	687.0	482.8	761.9	93.1	77.0
1984/85	77.0	813.7	506.9	782.8	100.7	107.8
1985/86	107.8	845.8	511.4	770.6	83.4	183.0
1986/87 3/	183.0	835.8	523.0	804.5	85.7	214.3
1987/88 3/	214.3	810.6	530.0	820.6	87.2	204.4

1/ Aggregated on basis of local marketing years, except for trade. 2/ Excluding intra-EC trade. Based on Oct/Sept. trade year from 1976/77. 1975/76 based on July/June trade year.  
3/ Forecast.

Source: Compiled from World Grain Situation and Outlook, FAS, and USDA data.

Table 3.—Corn: Marketing year supply and disappearance

Year beginning September 1	Supply				Domestic use	
	Beginning stocks	Production	Imports	Total	Food, alcohol, and industrial	Seed : re
						Million bushels
1982/83	2,536.6	8,235.1	0.7	10,772.4	880.3	14.5
1983/84	3,523.1	4,174.7	2.7	7,700.5	956.0	19.1
1984/85	1,006.3	7,674.0	3.5	8,683.8	1,070.0	21.2
1985/86	1,648.2	8,876.7	10.6	10,535.5	1,140.0	19.5
1986/87	4,039.5	8,252.8	2.0	12,294.3	1,175.0	15.6
1987/88 2/	4,929.0	7,231.0	2.0	12,162.0	- 1,200.0 -	4
	Area			Yield		
	Set-aside and diverted	Planted	Harvested for grain	per acre harvested	Received by farmers 3/	
	Million acres			Bushels		
1982/83	—	2.1	81.9	72.7	113.2	2.68
1983/84	—	32.2	60.2	51.5	81.1	3.25
1984/85	—	4.0	80.5	71.9	106.7	2.62
1985/86	—	5.4	83.4	75.2	118.0	2.23
1986/87	—	13.6	76.7	69.2	119.3	1.51
1987/88	—	21.1	66.0	59.6	121.4	1.60-2.00

1/ Includes quantity under loan and farmer-owned reserve. 2/ Projected average. 3/ Deficiency and disaster payments. 6/ Diversion payments. 7/



Disappearance, area, and prices, 1982/83-1987/88

Disappearance				Ending stocks Aug. 30			
Use	:	:	:	:	:	:	:
Feed	:	Exports	Total	Govt.	Privately	:	:
and	:	and	disap-	owned	owned	:	Total
residual	:	:	pearance	owned	1/	:	:

Million bushels

5	4,520.7	5,415.5	1,833.8	7,249.3	1,142.7	2,380.4	3,523.1
1	3,817.6	4,792.7	1,901.5	6,694.2	201.5	804.8	1,006.3
2	4,079.0	5,170.2	1,865.4	7,035.6	224.9	1,423.3	1,648.2
5	4,095.3	5,254.8	1,241.2	6,496.0	545.7	3,493.8	4,039.5
6	4,649.7	5,840.3	1,525.0	7,365.3	1,525.0	3,404.0	4,929.0
	4,700.0	5,900.0	1,600.0	7,500.0			4,662.0

Average prices				Government-support program		
ived	St. Louis	Omaha	Gulf Ports	National	:	Total
y	No. 2	No. 2	No. 2	average	Target	payments to
ers	Yellow	Yellow	Yellow	loan	price	participants
/	:	:	:	rate	:	:

Dollars per bushel				Mil. dol.		
68	2.87	2.73	3.06	2.55	2.70	5/ 292
25	3.49	3.23	3.67	2.65	2.86	6/ 904
62	2.81	2.65	3.00	2.55	3.03	7/ 1,652
23	2.37	2.25	2.52	2.55	3.03	7/ 2,484
51	4/ 1.68/	4/ 1.54	4/ 1.84	1.92	3.03	8/ 6,355
-2.00				1.82	3.03	8/ 7,685

ected. 3/ Excludes support payments. 4/ September 1986-July 1987  
ts. 7/ Deficiency payments. 8/ Deficiency and diversion payments.

Table 4.—Sorghum: Marketing year supply and demand

Year beginning September 1	Supply				Domestic	
	Beginning stocks	Production	Imports	Total	Food, alcohol, and industrial	Seed
1982/83	318.6	835.1	—	1,153.7	7.9	1.8
1983/84	439.1	487.5	0.1	926.7	7.7	2.3
1984/85	287.4	866.2	0.1	1,153.7	15.3	2.0
1985/86	300.2	1,120.3	—	1,420.5	26.0	1.7
1986/87	551.0	941.6	—	1,492.6	13.0	1.6
1987/88 2/	753.0	758.3	—	1,511.3	— 30.0 —	—
	Area			Yield		Received by farmer 3/
	National program	Set-aside and diverted	Planted	Harvested for grain	per acre harvested	
	—	—	—	—	—	—
1982/83	—	0.7	16.0	14.1	59.1	4.50
1983/84	—	5.7	11.9	10.0	48.7	5.07
1984/85	—	0.6	17.3	15.4	56.4	4.27
1985/86	—	0.9	18.3	16.8	66.8	3.44
1986/87	—	2.3	15.3	13.9	67.7	2.50
1987/88	—	3.9	11.8	10.5	72.1	1.50-1.6

1/ Includes quantity under loan and farmer-owned reserve. 2/ Projected average. 3/ Deficiency and disaster payments. 4/ Diversion payments.

and disappearance, area, and prices, 1982/83-1987/88

Disappearance				Ending stocks Aug. 30			
Domestic use	:	:	:	Total	:	Privately	:
: Feed	:	:	:	: dis-	:	owned	:
Seed	:	Total	:	pearance	:	1/	Total
: residual	:	:	:	:	:	:	:

Million bushels

1.8	494.8	504.5	210.1	714.6	171.5	267.6	439.1
2.3	384.7	394.7	244.6	639.3	102.8	184.6	287.4
2.0	539.3	556.6	296.9	853.5	112.1	188.1	300.2
1.7	663.8	691.5	178.0	869.5	207.2	343.8	551.0
1.6	525.0	539.6	200.0	739.6	420.0	333.0	753.0
-	525.0	555.0	225.0	780.0			731.3

Average prices				Government-support program		
Received	Kansas City:	Texas	Gulf ports	National	:	Total
by	: No. 2	: No. 2	: No. 2	: average	: Target	: payments to
farmers	: Yellow	: Yellow	: Yellow	: loan	: price	: participants
3/	:	:	:	: rate	:	:

Dollars per cwt.				Mil. dol.		
4.50	4.80	5.19	5.41	4.32	4.64	5/ 67
5.07	5.22	5.53	5.77	4.50	4.86	6/ 114
4.27	4.46	5.04	4.90	4.32	5.14	7/ 158
3.44	3.72	4.33	4.07	4.32	5.14	7/ 228
2.50	4/ 2.75	4/ 3.23	4/ 3.23	3.25	5.14	8/ 578
1.50-1.85				3.11	5.14	8/ 635

Projected. 3/ Excludes support payments. 4/ September 1985-July 1986  
 payments. 7/ Deficiency payments. 8/ Deficiency and diversion payments.

1/ Includes quantity under loan and farmer-owned reserve. 2/ Projected.  
to Duluth. 5/ Deficiency and disaster payments. 6/ Disaster payments. 7/

1/ Includes quantity under loan and farmer-owned reserve. 2/ Projected.  
to Duluth. 5/ Deficiency and disaster payments. 6/ Disaster payments. 7/



Disappearance, area, and prices, 1982/83-1987/88

Disappearance			Ending stocks May 31			
Use			Total	Govt.	Privately	Total
Feed	Exports	disap-	owned	owned	1/	
and	Total	pearance				
residual						

million bushels

2	240.4	410.5	47.2	457.7	6.0	210.7	216.7
5	282.8	451.8	91.5	543.3	11.9	177.5	189.4
6	303.9	474.5	76.8	551.3	14.6	232.8	247.4
4	332.6	501.2	21.8	523.0	57.4	267.4	324.8
9	294.9	468.9	136.7	605.6	75.5	260.9	336.4
	300.0	475.0	125.0	600.0			259.8

Average prices			Government-support program			
Used	Minneapolis	Portland	National	Total		
	No. 2 or	No. 3 or	average	Target	payments to	
rs	better	better	No. 2	loan	price	participants
	feed	malting		rate		

Dollars per bushel					Mil. dol.	
2	1.76	2.53	2.52	2.08	2.60	7/ 60
0	2.48	2.84	2.91	2.16	2.60	8/ 72
6	2.09	2.55	2.59	2.08	2.60	7/ 50
8	1.53	2.24	2.23	2.08	2.60	7/ 160
1	4/ 1.44	4/ 1.89	4/ 1.97	1.56	2.60	8/ 356
70				1.49	2.60	8/ 412

ected. 3/ Excludes support payments. 4/Starting March 1987, shifted  
s. 7/ Deficiency payments. 8/ Deficiency and diversion payments.

Table 6.--Oats: Marketing year supply and disappear

[illegible]

1/ Includes quantity under loan and farmer-owned reserve. 2/ Projected.  
support payments. 5/ Deficiency and diversion payments. 6/ Deficiency payments.

appearance, area, and prices, 1982/83-1987/88

Disappearance			Ending stocks May 31		
use			Total	Privately	
Feed	Exports	disap-	Govt.	owned	Total
and	Total	pearance	owned	1/	
residual					

million bushels

440.6	525.6	3.0	528.6	0.7	219.1	219.8
470.9	543.7	2.1	545.8	1.5	179.6	181.1
432.0	507.6	1.3	508.9	1.4	178.5	179.9
459.9	542.3	2.2	544.5	1.9	181.8	183.7
392.9	466.0	2.8	468.8	3.5	129.2	132.7
365.0	445.0	2.0	447.0			113.5

Average prices			Government-support program		
Minneapolis	Portland	Toledo	National	Total	
No. 2	No. 2	No. 2	average	Target	payments to
white,	white,	No. 2	loan	price	participants
heavy	heavy		rate		

----- Dollars per bushel ----- Mil. dol.

9	1.69	2.18	1.55	1.31	1.50	—
7	1.87	1.95	2.01	1.36	1.60	5/ 13
9	1.81	2.12	1.92	1.31	1.60	—
3	1.31	1.60	1.08	1.31	1.60	6/ 8
1	1.46	1.52	1.20	.99	1.60	5/ 34
.65				.94	1.60	5/ 23

ted. 3/ Not included in the program until 1982. 4/ Excludes  
y payments.

Table 7.—Corn: Marketing year supply and disap

Year beginning September 1	Supply				Domestic	
	Begin- ning stocks	Produc- tion	Imports	Total	Food, alcohol, and industrial	Seed
						Mill
1982/83						
Sept.-Nov.	2,536.6	8,235.1	0.3	10,772.0	217.5	—
Dec.-Feb.	8,906.3	—	0.1	8,906.4	201.6	—
Mar.-May	6,899.2	—	0.2	6,899.4	226.6	11.6
June-Aug.	4,923.9	—	0.1	4,924.0	234.6	2.9
Mkt. year	2,536.6	8,235.1	0.7	10,772.4	880.3	14.5
1983/84						
Sept.-Nov.	3,523.1	4,174.7	0.5	7,698.3	238.6	—
Dec.-Feb.	5,651.7	—	0.6	5,652.3	222.8	—
Mar.-May	3,865.0	—	1.0	3,866.0	247.3	16.8
June-Aug.	2,145.1	—	0.6	2,145.7	247.3	2.3
Mkt. year	3,523.1	4,174.7	2.7	7,700.5	956.0	19.1
1984/85						
Sept.-Nov.	1,006.3	7,674.0	0.9	8,681.2	249.7	—
Dec.-Feb.	6,631.1	—	0.4	6,631.5	241.5	—
Mar.-May	4,623.2	—	1.1	4,624.3	283.8	17.0
June-Aug.	2,835.5	—	1.1	2,836.6	295.0	4.2
Mkt. year	1,006.3	7,674.0	3.5	8,683.8	1,070.0	21.2
1985/86						
Sept.-Nov.	1,648.2	8,876.7	1.0	10,525.9	278.0	—
Dec.-Feb.	8,614.7	—	1.3	8,616.0	264.0	—
Mar.-May	6,587.1	—	2.3	6,589.4	293.0	16.1
June-Aug.	4,990.0	—	6.0	4,996.0	305.0	3.4
Mkt. year	1,648.2	8,876.7	10.6	10,535.5	1,140.0	19.5
1986/87						
Sept.-Nov.	4,039.5	8,252.8	0.8	12,293.1	280.0	—
Dec.-Feb.	10,304.1	—	0.3	10,304.4	270.0	—
Mar.-May	8,248.2	—	.5	8,248.7	310.0	15.4
June-Aug.	6,331.7	—	—	—	—	—
Mkt. year 2/	4,039.5	8,252.8	2.0	12,294.3	1,175.0	15.6
1987/88 3/						
Mkt. year 3/	4,929.0	7,231.0	2.0	12,162.0	- 1,200.0 -	—

1/ Includes quantity under loan and farmer-owned reserve. 2/ Preliminary



disappearance, specified periods, 1982/83 to date

Disappearance			Ending stocks		
Domestic use	:	Total	:	Privately:	:
Feed and residual	:	Exports	:	Govt. owned	:
:	:	:	:	:	:

Million bushels

---	1,202.0	1,419.5	446.2	1,865.7	372.0	8,534.3	8,906.3
---	1,293.6	1,495.2	512.0	2,007.2	470.8	6,428.4	6,899.2
1.6	1,258.3	1,496.5	479.0	1,975.5	491.7	4,432.2	4,923.9
2.9	766.8	1,004.3	396.6	1,400.9	1,142.7	2,380.4	3,523.1
4.5	4,520.7	5,415.5	1,833.8	7,249.3	1,142.7	2,380.4	3,523.1
---	1,311.0	1,549.6	497.0	2,046.6	1,227.0	4,424.7	5,651.7
---	1,056.0	1,278.8	508.5	1,787.3	1,214.0	2,651.0	3,865.0
6.8	939.5	1,203.6	517.3	1,720.9	195.0	1,950.1	2,145.1
2.3	511.1	760.7	378.7	1,139.4	201.5	804.8	1,006.3
9.1	3,817.6	4,792.7	1,901.5	6,694.2	201.5	804.8	1,006.3
---	1,294.2	1,543.9	506.2	2,050.1	206.7	6,424.4	6,631.1
---	1,182.9	1,424.4	583.9	2,008.3	209.7	4,413.5	4,623.2
7.0	1,009.1	1,309.9	478.9	1,788.8	221.7	2,613.8	2,835.5
4.2	592.8	892.0	296.4	1,188.4	224.9	1,423.3	1,648.2
1.2	4,079.0	5,170.2	1,865.4	7,035.6	224.9	1,423.3	1,648.2
---	1,215.5	1,493.5	417.7	1,911.2	388.6	8,226.1	8,614.7
---	1,299.6	1,563.6	465.3	2,028.9	509.4	6,077.7	6,587.1
6.1	1,085.9	1,395.0	204.4	1,599.4	550.9	4,439.1	4,990.0
3.4	494.3	802.7	153.8	956.5	545.7	3,493.8	4,039.5
9.5	4,095.3	5,254.8	1,241.2	6,496.0	545.7	3,493.8	4,039.5
---	1,387.9	1,667.9	321.1	1,989.0	968.2	9,335.9	10,304.1
---	1,470.8	1,740.8	315.4	2,056.2	1,362.2	6,884.6	8,248.2
5.4	1,089.2	1,414.6	502.4	1,917.0			6,331.7
5.6	4,649.7	5,840.3	1,525.0	7,365.3	1,525.0	3,404.0	4,929.0
0 -	4,700.0	5,900.0	1,600.0	7,500.0			4,662.0

0 Preliminary 3/ Projected.

Table 8.—Sorghum: Marketing year supply and dispo

Year beginning September 1	Supply				Domestic use	
	Begin- ning stocks	Produc- tion	Imports	Total	Food, alcohol, and industrial	Seed
						Mill
1982/83						
Sept.-May	318.6	835.1	0	1,153.7	6.0	0.9
June-Aug.	529.1	0	0	529.1	1.9	0.9
Mkt. year	318.6	835.1	0	1,153.7	7.9	1.8
1983/84						
Sept.-May	439.1	487.5	0	926.6	5.7	1.1
June-Aug.	368.9	0	0.1	369.0	2.0	1.2
Mkt. year	439.1	487.5	0.1	926.7	7.7	2.3
1984/85						
Sept.-May	287.4	866.2	0.1	1,153.7	12.4	1.5
June-Aug.	360.8	0	0	360.8	2.9	0.5
Mkt. year	287.4	866.2	0.1	1,153.7	15.3	2.0
1985/86						
Sept.-May	300.2	1,120.3	0	1,420.5	22.1	1.2
June-Aug.	630.0	0	0	630.0	3.9	0.5
Mkt. year	300.2	1,120.3	0	1,420.5	26.0	1.7
1986/87						
Sept.-May	551.0	941.6	0	1,492.6	11.0	1.0
June-Aug.						
Mkt. year 2/	551.0	941.6	0	1,492.6	13.0	1.6
1987/88 3/						
Mkt. year 3/	753.0	758.3	0	1,511.3	-30.0 -	

1/ Includes quantity under loan and farmer-owned reserve. 2/ Preliminary

disappearance, specified periods, 1982/83 to date

Disappearance			Ending stocks		
Feed use	:	Total	:	Privately:	
Feed and	:	Exports	:	Govt. owned	Total
residual	:	disappearance	:	1/	:

Million bushels

0.9	453.5	460.4	164.2	642.6	54.0	475.1	529.1
0.9	41.3	44.1	45.9	90.0	171.5	267.6	439.1
1.8	494.8	504.5	210.1	714.6	171.5	267.6	439.1
1.1	356.5	363.3	194.4	557.7	78.0	290.9	368.9
1.2	28.2	31.4	50.2	81.6	102.8	184.6	287.4
2.3	384.7	394.7	244.6	639.3	102.8	184.6	287.4
1.5	542.2	556.1	236.8	792.9	111.1	249.7	360.8
0.5	-2.9	0.5	60.1	60.6	112.1	188.1	300.2
2.0	539.3	556.6	296.9	853.5	112.1	188.1	300.2
1.2	626.9	650.2	140.3	790.5	181.4	447.5	630.0
0.5	36.9	41.3	37.7	79.0	207.2	343.8	551.0
1.7	663.8	691.5	178.0	869.5	207.2	343.8	551.0
1.0	503.7	515.7	154.9	670.6	400.4	421.6	822.0
1.6	525.0	539.6	200.0	739.6	420.0	333.0	753.0
	525.0	555.0	225.0	780.0			731.3

liminary. 3/ Projected.

Table 9.—Average prices received by farmers, United States, by months, 1981-87 1/

Item and year beginning September 1	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average weighted by sales 2/
Dollars per bushel													
Corn													
1981	2.55	2.45	2.34	2.39	2.54	2.44	2.46	2.55	2.60	2.57	2.50	2.30	2.47
1982	2.15	1.98	2.13	2.26	2.36	2.56	2.71	2.95	3.03	3.04	3.13	3.35	2.55
1983	3.32	3.15	3.17	3.15	3.15	3.11	3.21	3.32	3.34	3.36	3.30	3.12	3.21
1984	2.90	2.65	2.55	2.56	2.64	2.62	2.67	2.70	2.68	2.64	2.60	2.44	2.63
1985	2.29	2.11	2.21	2.29	2.33	2.32	2.29	2.30	2.39	2.32	2.00	1.73	2.23
1986	1.45	1.40	1.47	1.50	1.47	1.42	1.47	1.52	1.66	1.69	*1.59		1.55
Dollars per cwt													
Sorghum													
1981	4.07	3.90	3.87	3.95	4.09	4.08	4.00	4.10	4.35	4.17	3.96	3.95	4.01
1982	3.80	3.70	3.78	3.97	4.09	4.42	4.67	4.92	5.05	5.05	5.03	5.29	4.41
1983	5.26	5.01	4.98	4.93	4.92	4.74	4.85	5.00	5.08	4.94	4.64	4.58	4.89
1984	4.24	4.05	4.05	4.15	4.16	4.10	4.24	4.46	4.54	4.52	4.04	3.74	4.15
1985	3.27	3.30	3.47	3.76	3.69	3.55	3.67	3.80	3.99	3.43	3.06	2.66	3.45
1986	2.36	2.34	2.38	2.41	2.37	2.36	2.45	2.58	2.69	2.80	*2.92		1.40
Item and year beginning June 1	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average weighted by sales 1/
Dollars per bushel													
Oats													
1981	1.99	1.84	1.72	1.74	1.78	1.88	1.94	1.97	1.99	2.02	1.99	1.99	1.88
1982	1.88	1.57	1.39	1.35	1.32	1.40	1.44	1.46	1.48	1.49	1.54	1.54	1.49
1983	1.31	1.46	1.45	1.55	1.62	1.67	1.73	1.81	1.88	1.81	1.82	1.84	1.62
1984	1.80	1.68	1.62	1.60	1.69	1.64	1.72	1.74	1.69	1.68	1.68	1.60	1.67
1985	1.59	1.31	1.16	1.10	1.08	1.17	1.20	1.18	1.16	1.14	1.13	1.21	1.23
1986	1.10	.90	.86	.99	1.11	1.32	1.44	1.46	1.47	1.46	1.49	1.57	1.21
1987	1.51	*1.35											
Barley													
1981	2.94	2.41	2.37	2.44	2.38	2.49	2.48	2.50	2.40	2.40	2.42	2.53	2.48
1982	2.39	2.16	2.20	2.17	1.98	2.06	2.19	2.16	2.00	2.09	2.22	2.36	2.18
1983	2.32	2.20	2.34	2.46	2.53	2.55	2.55	2.55	2.47	2.50	2.54	2.78	2.47
1984	2.61	2.54	2.26	2.25	2.29	2.25	2.19	2.24	2.21	2.18	2.16	2.22	2.29
1985	2.14	2.08	1.90	1.88	1.96	2.05	2.07	2.05	1.95	1.88	1.85	1.73	1.98
1986	1.97	1.67	1.51	1.45	1.58	1.69	1.61	1.60	1.63	1.69	1.69	1.76	1.61
1987	1.75	*1.55											
Item and year beginning May 1	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	Average weighted by sales
Dollars per ton													
Hay (mid-month)													
1981	75.30	66.90	64.00	63.90	62.70	64.80	65.40	65.70	67.90	69.90	69.50	73.30	67.30
1982	77.50	69.60	66.10	65.00	66.80	67.10	68.70	68.60	70.30	73.20	69.90	74.00	69.30
1983	78.10	72.70	71.20	71.20	74.70	76.80	75.10	76.70	76.60	78.70	79.40	79.80	75.80
1984	82.50	76.10	72.40	70.40	70.70	73.10	71.40	73.40	73.00	73.10	72.20	72.50	72.70
1985	80.80	70.20	67.90	65.20	67.10	67.90	64.30	65.40	65.80	66.70	67.10	66.20	67.60
1986	70.30	61.50	58.40	58.10	57.80	56.90	56.00	56.80	55.40	58.10	57.90	62.90	60.10
1987	73.30	63.20	61.60										

1/ Prices do not include an allowance for loans outstanding and government purchases. 2/ U.S. average prices based on U.S. monthly prices weighted by monthly marketings. \*Preliminary.

Source: Agricultural Prices, Agricultural Statistics Board, USDA.

Table 10.—Cash prices at principal markets, 1981-87

Item and year beginning September 1	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Simple average
Dollars per bushel													
CORN No. 2 Yellow, St. Louis													
1981	2.61	2.53	2.59	2.54	2.65	2.61	2.66	2.78	2.78	2.75	2.68	2.42	2.63
1982	2.32	2.12	2.43	2.49	2.52	2.79	2.99	3.24	3.24	3.27	3.39	3.68	2.87
1983	3.60	3.50	3.53	3.45	3.41	3.31	3.55	3.61	3.58	3.57	3.43	3.33	3.49
1984	3.09	2.84	2.77	2.75	2.86	2.84	2.86	2.88	2.81	2.79	2.72	2.47	2.81
1985	2.38	2.27	2.50	2.59	2.55	2.50	2.42	2.46	2.56	2.52	2.01	1.67	2.37
1986	1.47	1.46	1.68	1.69	1.61	1.57	1.65	1.74	1.93	1.92	1.79		
CORN No. 2 Yellow, Omaha													
1981	2.51	2.44	2.39	2.37	2.47	2.45	2.48	2.61	2.65	2.65	2.54	2.23	2.48
1982	2.23	2.12	2.35	2.37	2.42	2.62	2.82	3.09	3.10	3.11	3.18	3.39	2.73
1983	3.32	3.23	3.24	3.17	3.11	3.03	3.25	3.33	3.35	3.37	3.22	3.11	3.23
1984	2.94	2.71	2.61	2.55	2.60	2.61	2.68	2.73	2.68	2.70	2.61	2.39	2.65
1985	2.35	2.26	2.28	2.36	2.33	2.31	2.31	2.34	2.43	2.42	2.01	1.61	2.25
1986	1.41	1.40	1.55	1.54	1.44	1.39	1.47	1.57	1.76	1.77	1.59		
SORGHUM No. 2 Yellow, Kansas City													
Dollars per cwt													
1981	4.16	4.14	4.14	4.27	4.44	4.26	4.28	4.45	4.48	4.50	4.38	4.02	4.29
1982	4.06	3.85	4.25	4.37	4.37	4.54	5.08	5.30	5.37	5.37	5.32	5.69	4.80
1983	5.55	5.37	5.25	5.16	5.09	5.03	5.40	5.36	5.39	5.40	4.95	4.74	5.22
1984	4.46	4.25	4.28	4.32	4.48	4.33	4.58	4.76	4.74	4.74	4.50	4.06	4.46
1985	3.56	3.62	3.75	3.97	3.95	3.80	3.82	4.00	4.25	4.00	3.20	2.71	3.72
1986	2.47	2.60	2.70	2.62	2.50	2.57	2.80	2.85	3.10	3.20	2.80		
Item and year beginning June 1	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Simple average
Dollars per bushel													
OATS No. 2 Heavy, Minneapolis													
1981	2.18	2.02	1.99	2.02	2.09	2.28	2.10	2.23	2.26	2.16	2.21	2.16	2.14
1982	2.12	1.87	1.53	1.51	1.51	1.67	1.67	1.67	1.63	1.63	1.73	1.71	1.69
1983	1.67	1.60	1.79	1.94	2.00	1.97	1.94	1.98	1.82	1.88	1.89	1.96	1.87
1984	1.92	1.84	1.77	1.79	1.84	1.92	1.87	1.81	1.82	1.79	1.73	1.65	1.81
1985	1.59	1.44	1.23	1.24	1.19	1.32	1.39	1.37	1.30	1.27	1.16	1.22	1.31
1986	1.18	1.05	1.12	1.29	1.39	1.72	1.66	1.64	1.56	1.46	1.59	1.83	1.46
1987	1.64	1.61											
BARLEY No. 2 or Better Feed, Minneapolis 1/													
1981	2.09	2.26	2.35	2.21	2.26	2.31	2.06	2.20	2.27	2.16	2.16	2.24	2.21
1982	2.12	1.85	1.72	1.69	1.54	1.58	1.59	1.63	1.72	1.73	2.01	1.95	1.76
1983	1.96	1.95	2.42	2.61	2.60	2.53	2.39	2.55	2.56	2.65	2.74	2.77	2.48
1984	2.59	2.18	2.13	2.05	2.10	2.06	1.88	1.98	1.99	1.97	2.05	2.05	2.09
1985	1.90	1.66	1.46	1.40	1.41	1.49	1.60	1.57	—	—	—	1.31	1.53
1986	1.23	1.16	1.13	1.27	1.50	1.63	1.23	—	—2/	1.64	1.76	1.86	1.44
1987	1.73	1.59											
BARLEY No. 3 or Better Malting, 65% or Better Plump, Minneapolis													
1981	3.34	2.95	3.15	3.05	3.02	3.07	2.92	3.00	3.14	2.99	2.98	3.05	3.06
1982	2.93	2.63	2.48	2.37	2.42	2.45	2.37	2.38	2.42	2.45	2.68	2.76	2.53
1983	2.60	2.54	2.76	2.90	2.96	2.95	2.77	2.85	2.76	2.91	3.04	3.06	2.84
1984	3.04	2.86	2.48	2.44	2.43	2.43	2.36	2.46	2.47	2.51	2.52	2.55	2.55
1985	2.46	2.25	2.03	2.15	2.10	2.27	2.29	2.28	2.20	2.34	2.40	2.07	2.24
1986	1.84	1.75	1.61	1.76	1.93	2.02	1.88	1.81	1.92	2.01	2.05	2.12	1.89
1987	2.07	1.93											

1/ Reporting point changed from Minneapolis #2 feed to Duluth #2 feed beginning March 1987.

Source: Grain and Feed Market News, AMS, USDA.



Table 11.—Feed-price ratios for livestock, poultry, and milk, by months, 1981-87

Item and year beginning September 1	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Average
<b>HOG/CORN, U.S. basis 1/</b>													
1981	19.1	18.4	17.7	16.3	17.1	19.8	19.8	20.1	21.8	22.4	23.1	26.6	20.2
1982	28.5	28.2	24.6	23.7	23.4	21.9	18.6	15.9	15.1	14.4	13.9	13.9	20.2
1983	13.3	12.8	11.8	14.0	15.4	14.6	14.3	14.3	14.1	14.6	15.8	16.2	14.3
1984	16.0	16.5	18.4	19.0	18.2	18.4	16.3	15.3	15.4	16.9	17.6	17.4	17.1
1985	17.3	20.4	19.5	19.8	19.0	18.4	17.6	17.3	19.2	22.7	29.5	35.9	19.9
1986 2/	40.2	37.9	35.9	33.7	32.1	33.9	32.2	33.4	32.8	34.7	37.4		
<b>BEEF-STEER/CORN, Omaha 3/</b>													
1981	26.0	25.2	25.0	25.0	24.6	25.9	26.5	26.5	27.2	26.5	26.1	29.2	26.1
1982	27.5	27.7	25.1	25.2	24.5	23.4	22.7	21.9	21.8	21.2	19.6	18.1	23.2
1983	17.8	18.4	18.3	19.8	21.6	22.1	21.1	20.4	19.7	19.1	20.4	20.7	20.0
1984	21.3	22.4	24.6	25.6	24.8	24.1	22.2	21.5	21.5	21.0	20.4	21.7	22.6
1985	21.8	25.7	27.8	26.7	25.6	24.4	24.0	22.9	23.0	22.3	28.9	36.7	25.8
1986 2/	42.1	42.7	39.7	38.8	40.8	43.9	41.9	42.2	40.2	38.9	41.4		
<b>MILK/FEED, U.S. basis 4/</b>													
1981	1.48	1.53	1.56	1.54	1.55	1.53	1.53	1.51	1.46	1.47	1.47	1.50	1.51
1982	1.57	1.61	1.62	1.60	1.59	1.56	1.55	1.49	1.45	1.43	1.45	1.41	1.53
1983	1.36	1.39	1.36	1.34	1.33	1.33	1.34	1.32	1.32	1.32	1.35	1.40	1.35
1984	1.48	1.56	1.62	1.59	1.57	1.57	1.55	1.51	1.47	1.45	1.44	1.47	1.52
1985	1.51	1.56	1.55	1.53	1.48	1.50	1.48	1.48	1.46	1.45	1.51	1.55	1.51
1986 2/	1.61	1.75	1.77	1.77	1.74	1.69	1.63	1.62	1.58	1.55	1.55		
<b>EGG/FEED, U.S. basis 5/</b>													
1981	6.4	6.5	7.2	6.7	6.6	6.8	7.1	6.6	5.6	5.3	5.7	5.4	6.3
1982	6.0	6.3	6.3	6.0	5.7	5.8	6.1	5.8	6.0	5.8	5.7	6.1	6.0
1983	6.0	6.2	6.9	7.7	8.8	8.5	7.4	8.6	6.5	5.8	5.8	5.8	7.0
1984	5.9	5.7	6.5	6.3	5.4	5.6	6.3	5.7	5.5	5.9	5.8	6.5	5.9
1985	7.1	7.3	7.5	7.4	7.2	6.9	7.6	6.4	6.4	5.7	6.9	7.3	7.1
1986 2/	7.3	7.0	8.0	7.9	7.2	7.1	6.6	6.7	6.0	6.1	4.7		
<b>BROILER/FEED, U.S. basis 6/</b>													
1981	2.4 *	2.4	2.4	2.3	2.6	2.6	2.6	2.5	2.6	2.7	2.6	2.5	2.5
1982	2.6	2.5	2.5	2.5	2.6	2.7	2.4	2.3	2.4	2.6	2.8	2.8	2.6
1983	2.7	2.5	2.8	2.9	3.1	3.1	3.1	2.7	2.7	2.7	3.0	2.7	2.8
1984	2.8	2.6	2.8	2.7	2.9	2.9	2.8	2.8	3.1	3.2	3.1	3.1	2.9
1985	3.2	3.1	3.5	3.2	3.2	3.1	3.1	3.1	3.4	3.7	4.5	4.6	3.4
1986 2/	3.8	4.4	3.9	3.5	3.6	3.5	3.3	3.2	3.3	3.0	3.4		
<b>TURKEY/FEED, U.S. basis 7/</b>													
1981	3.1	2.8	3.1	2.9	3.0	3.0	3.0	3.0	3.0	3.2	3.4	3.5	3.1
1982	3.8	3.9	3.9	3.0	2.9	2.9	2.9	2.7	2.9	3.0	2.8	2.8	3.1
1983	3.0	3.0	3.1	3.5	3.6	3.2	3.3	3.3	3.3	3.3	3.6	3.8	3.3
1984	3.9	4.4	5.0	5.5	4.7	3.8	3.7	3.7	3.7	3.8	4.2	4.5	4.2
1985	5.0	5.5	5.5	5.5	3.4	3.4	3.5	3.5	3.8	4.3	4.5	4.6	4.0
1986 2/	4.7	4.9	4.8	4.0	3.3	3.4	3.6	3.5	3.3	3.3	3.1		

1/ Bushels of corn equal in value to 100 pounds of hog, live weight. 2/ Preliminary. 3/ Based on price of choice beef-steers, 900-1,100 pounds. 4/ Pounds of 16 percent mixed dairy feed equal in value to 1 pound whole milk. 5/ Pounds of laying feed equal in value to 1 dozen eggs. 6/ Pounds of broiler grower feed equal in value to 1 pound broiler, live weight. 7/ Pounds of turkey grower feed equal in value to 1 pound turkey, live weight.

Source: Agricultural Prices, Agricultural Statistics Board, USDA.

Table 12.—Price trends, selected feeds, and corn products

Item	Unit	Sept.-Aug. 1985/86 1/	1987						
			Jan.	Feb.	Mar.	Apr.	May	June	July
<b>WHOLESALE, MOSTLY BULK 2/</b>									
Soybean meal, 44% solvent, Decatur	\$/ton	152	147	154	147	159	181	187	181
Soybean meal, high protein, Decatur	"	162	158	169	161	173	190	202	197
Cottonseed meal, 41% solvent, Memphis	"	129	146	138	128	134	150	155	167
Linseed meal, 34% solvent, Minneapolis	"	112	106	100	102	119	120	117	116
Meat and bone meal, Kansas City	"	166	175	173	179	192	217	222	222
Fishmeal, 65% protein, East Coast	"	284	313	316			336	360	354
Corn gluten feed, Illinois pts.	"	89	98	98	100	98	97	94	91
Corn gluten meal, 60% protein, Illinois pts.	"	209	232	206	209	213	226	268	269
Brewers' dried grains, Milwaukee	"	75	101	62	51	68	82	77	72
Distillers' dried grain, Lawrenceburg, Ky.	"	108	113	110	105	101	111	116	118
Feather meal, Arkansas Pts.	"	143	145	141	139	138	159	153	179
Wheat bran, Kansas City	"	60	57	47	46	36	38	36	44
Wheat middlings, Kansas City	"	60	57	47	46	36	38	36	44
Rice bran, f.o.b. mills, Arkansas	"	45	45	35	22	27	27	26	24
Hominy feed, Illinois pts.	"	81	61	59	52	53	67	69	74
Alfalfa meal, dehy., Kansas City	"	93	96	96	95	97	96	90	91
Cane molasses, New Orleans	"	67	56	59	62	59	59	53	51
Molasses beet pulp, Los Angeles	"	109	103	105	101	95	89	89	89
Animal fat, Kansas City	¢/lb.	9.5	11.2	11.5	10.6	9.6	10.5	10.5	10.4
Urea, 42% N., Fort Worth	\$/ton	217	225	225	225	225	225	225	225
Corn, No. 2 white, Kansas City	\$/bu.	2.49	2.50	2.41	2.15	2.10	2.10	2.10	2.20
<b>PRICES PAID, U.S. BASIS 3/</b>									
Soybean meal, 44%	\$/cwt.	11.03	11.30	"	"	11.40	"	"	12.40
Cottonseed meal, 41%	"	11.43	12.80	"	"	12.50	"	"	13.00
Wheat bran	"	9.28	8.89	"	"	8.90	"	"	8.72
Wheat middlings	"	8.52	7.81	"	"	7.50	"	"	7.52
Broiler grower feed	\$/ton	188	174	"	"	183	"	"	193
Laying feed	"	176	164	"	"	167	"	"	178
Turkey grower feed	"	213	210	"	"	209	"	"	217
Chick starter	"	189	181	"	"	188	"	"	206
Dairy feed, 16%	"	164	153	"	"	152	"	"	154
Beef cattle concentrate, 32-36% protein	\$/cwt.	10.63	10.90	"	"	10.50	"	"	11.00
Hog concentrate, 38-42% protein	"	12.93	13.30	"	"	13.20	"	"	14.40
Stock salt	"	6.48	6.56	"	"	6.53	"	"	6.63
<b>CORN PRODUCTS, WHOLESALE 4/</b>									
Corn meal, New York									
Yellow	\$/cwt.	12.60	11.15	10.96	11.17	11.35	11.70	11.67	11.18
Grits (brewers'), Chicago	"	9.65	8.13	7.94	8.15	8.33	8.70	8.65	8.16
Syrup, Chicago West	c/lb.	9.04	8.16	8.16	8.16	8.16	8.16	8.16	8.16
Sugar (dextrose), Chicago West	"	22.00	22.00	22.00	21.75	21.00	20.20	20.25	20.50
High-fructose (dried weight in tank cars), Chicago West	"	12.90	13.55	12.15	10.38	9.81	10.20	11.38	12.50
Corn starch, f.o.b. Midwest	\$/cwt.	9.69	9.00	9.00	9.00	9.10	9.40	10.00	10.00

1/ Preliminary. 2/ Grain and Feed Market News, AMS, USDA, except urea which is from Feedstuffs, Miller Publishing Co., Minneapolis, Minnesota. 3/ Agricultural Prices, Agricultural Statistics Board, USDA. 4/ Milling and Baking News, Kansas City, Missouri, except starch which is from industry sources.

Table 13.—Corn, sorghum, barley, and oats exports, 1984/85 to date

Year and month	CORN			SORGHUM GRAIN	Year and month	BARLEY		OATS	
	Grain only	Total process	Grand total			Grain only	Total	Grain only	Total
Bushels					Bushels				
1984/85					1984/85				
Sept	107,064,816	951,331	108,016,147	26,778,001	June	4,668,354	4,884,210	16,340	204,719
Oct	154,055,992	1,177,835	155,233,827	36,290,021	July	1,506,275	2,146,787	51,644	162,650
Nov	242,124,317	842,579	242,966,896	22,711,771	Aug	4,965,763	5,155,469	28,335	37,065
1st Qtr	503,245,125	2,971,745	506,216,870	85,779,793	Sept	17,185,453	17,474,876	58,861	188,704
Dec	206,686,724	996,686	207,683,410	25,549,814	1st Qtr	28,325,845	29,661,342	155,180	593,138
Jan	208,081,216	765,323	208,846,539	29,096,442	Oct	8,750,660	8,959,255	78,898	132,116
Feb	165,648,304	1,697,044	167,345,348	32,640,358	Nov	9,226,887	9,937,205	25,988	67,587
2nd Qtr	580,416,244	3,459,053	583,875,297	87,286,614	Dec	10,739,791	11,775,706	45,452	66,239
Mar	170,693,089	1,208,460	171,901,549	26,133,824	2nd Qtr	28,717,338	30,670,166	150,338	265,942
Apr	167,741,483	1,303,826	169,045,309	19,774,404	Jan	6,023,494	7,154,739	27,549	56,389
May	136,292,380	1,659,421	137,951,801	17,817,664	Feb	4,249,537	4,712,199	44,293	107,702
3rd Qtr	474,726,952	4,171,707	478,898,659	63,725,892	Mar	1,173,727	1,258,040	68,000	75,236
June	105,494,909	2,315,648	107,810,557	25,247,583	3rd Qtr	11,446,758	13,124,978	139,642	239,327
July	95,527,431	1,230,827	96,758,258	18,747,724	Apr	227,362	367,280	35,822	120,640
Aug	90,839,919	986,060	91,826,779	16,117,507	May	2,937,606	3,013,712	13,925	48,363
4th Qtr	291,862,259	4,533,335	296,395,594	60,112,814	4th Qtr	3,164,968	3,380,992	49,747	169,003
TOTAL	1,850,250,580	15,135,840	1,865,386,420	296,905,113	TOTAL	71,654,909	76,837,478	494,907	1,267,410
1985/86					1985/86				
Sept	79,897,274	833,679	80,730,953	29,172,725	June	1,487,412	1,649,817	44,678	87,396
Oct	124,900,086	917,870	125,817,956	23,654,139	July	3,731,241	3,860,606	23,529	69,692
Nov	210,005,197	1,173,603	211,178,800	17,378,277	Aug	5,179,203	5,303,587	33,906	163,983
1st Qtr	414,802,557	2,925,152	417,727,709	70,205,141	Sept	831,326	937,470	52,866	89,470
Dec	175,971,674	2,540,388	178,512,062	11,858,105	1st Qtr	11,229,182	11,751,480	154,979	410,541
Jan	164,709,634	1,351,663	166,061,297	17,264,657	Oct	2,652,026	2,799,218	120,219	153,203
Feb	119,524,523	1,157,729	120,682,252	13,994,213	Nov	3,768,477	3,869,960	111,195	350,174
2nd Qtr	460,205,831	5,049,780	465,255,611	43,116,975	Dec	112,702	237,932	23,556	37,750
Mar	97,479,313	922,855	98,402,168	6,723,066	2nd Qtr	6,533,205	6,907,110	254,970	541,127
Apr	57,426,414	786,654	58,213,068	8,997,402	Jan	1,119,603	1,546,100	8,934	69,750
May	46,520,450	1,254,677	47,775,127	11,610,994	Feb	49,160	116,456	43,584	96,515
3rd Qtr	201,426,177	2,964,186	204,390,363	26,931,462	Mar	1,148	192,476	250,397	288,260
June	55,802,755	1,016,137	56,818,892	10,467,071	3rd Qtr	1,169,911	1,855,032	302,915	454,525
July	44,609,875	871,083	45,480,958	17,830,311	Apr	720,309	816,587	49,085	93,425
Aug	30,484,684	1,068,258	31,552,942	9,436,885	May	57,584	472,599	473,733	693,272
4th Qtr	105,897,314	2,955,478	108,852,792	37,734,267	4th Qtr	777,893	1,289,186	522,818	786,697
TOTAL	1,227,331,879	13,894,596	1,241,226,475	177,987,845	Total	19,710,191	21,802,808	1,235,682	2,192,890
1986/87					1986/87				
Sept	80,082,655	1,181,307	81,263,962	14,227,263	June	2,000	276,815	79,108	128,492
Oct	124,025,138	818,619	124,843,757	18,547,828	July	1,164,620	1,597,139	81,504	217,421
Nov	114,104,314	848,497	114,952,811	14,680,456	Aug	12,319,164	12,514,711	73,364	335,437
1st Qtr	318,212,107	2,848,423	321,060,530	47,455,547	Sept	12,772,707	12,912,177	121,288	327,625
Dec	109,759,488	925,574	110,685,062	19,954,747	1st Qtr	26,258,491	27,300,842	355,264	1,008,975
Jan R.	104,283,400	990,714	105,274,114	15,484,239	Oct	16,480,986	16,559,353	167,403	411,976
Feb	98,787,906	657,881	99,445,787	20,749,712	Nov	14,292,746	14,363,851	32,293	167,870
2nd Qtr	312,830,794	2,574,169	315,404,963	56,188,698	Dec	14,532,134	14,661,828	17,314	315,049
Mar	143,717,211	1,658,289	145,375,500	24,415,530	2nd Qtr	45,305,866	45,585,032	217,010	894,895
Apr	183,288,269	992,304	184,280,573	12,956,519	Jan	1,205,709	1,262,335	30,960	75,145
May	169,091,351	1,465,054	170,556,405	13,788,332	Feb	16,084,544	16,522,282	30,776	178,452
3rd Qtr	496,096,831	4,135,647	500,232,478	51,160,381	Mar	17,639,725	18,150,611	115,234	277,846
June	120,026,244	791,997	120,818,241	12,940,287	3rd Qtr	34,929,978	35,935,228	176,970	531,443
					Apr	16,599,968	17,153,570	105,251	191,418
					May	10,522,937	10,726,481	67,436	168,607
					4th Qtr	27,122,905	27,880,051	172,687	360,025
					TOTAL	133,617,240	136,701,153	921,931	2,795,338
					1987/88				
					June	517,681	754,738	104,217	187,886

Total corn exports include grain only (white, yellow, seed, relief), dry process (cornmeal for relief, as grain, grits), and wet process (corn starch, sugar dextrose, glucose, high fructose). Sorghum includes seed and unaltered. Barley includes grain only (grain for malting purposes, other) and barley malt. Oats include grain and oatmeal (bulk and packaged).

Source: Bureau of the Census, U.S. Department of Commerce.

Table 14.—Corn, sorghum, barley, and oats imports, 1984/85 to date

Year and month	CORN		SORGHUM	Year and month	BARLEY		OATS	
	Grain only	Total			Grain only	Total	Grain only	Total
		Bushels				Bushels		
1984/85				1984/85				
Sept	116,290	127,399	0	June	920,819	1,054,291	305,312	322,345
Oct	260,438	317,134	0	July	722,362	883,625	1,469,282	1,490,031
Nov	345,944	440,702	0	Aug	1,025,658	1,165,980	217,495	234,276
				Sept	284,510	466,491	3,771,243	3,786,897
1st Qtr	722,672	885,235	0	1st Qtr	2,951,349	3,570,387	5,763,332	5,833,549
Dec	41,045	134,862	120,673	Oct	276,438	505,461	3,449,893	3,462,452
Jan	41,923	147,951	0	Nov	300,744	591,477	1,485,364	1,494,579
Feb	0	81,696	0	Dec	1,640,951	1,899,683	4,119,279	4,138,000
2nd Qtr	82,970	364,109	120,673	2nd Qtr	2,218,133	2,996,621	9,054,536	9,095,031
Mar	15,777	93,686	0	Jan	358,752	618,802	4,035,973	4,095,972
Apr	9,264	38,751	0	Feb	356,654	688,930	4,017,603	4,092,731
May	824,177	936,859	0	Mar	537,365	905,566	3,857,568	3,900,423
3rd Qtr	849,218	1,069,296	0	3rd Qtr	1,252,771	2,213,298	11,911,144	12,089,126
June	60,875	944,203	0					
July	1,428	39,177	0	Apr	939,773	1,166,350	5,170,327	5,257,192
Aug	15,836	135,868	0	May	60,460	160,312	1,728,469	1,751,151
4th Qtr	78,139	1,119,248	0	4th Qtr	1,000,233	1,326,662	6,898,796	7,008,343
TOTAL	1,732,999	3,437,888	120,673	TOTAL	7,422,486	10,106,968	33,627,808	34,026,049
1985/86				1985/86				
Sept	8,086	33,974	0	June	340,425	588,237	1,728,933	1,757,614
Oct	314,654	350,199	0	July	251,910	478,428	1,889,404	1,931,401
Nov	540,018	600,046	1,429	Aug	61,653	345,756	825,818	834,833
				Sept	109,312	347,927	1,288,425	1,304,864
1st Qtr	862,758	984,219	1,429	1st Qtr	763,300	1,760,348	5,732,580	5,828,712
Dec	121,966	258,092	0	Oct	872,324	1,087,159	1,256,991	1,264,610
Jan	374,481	483,279	0	Nov	539,674	591,311	1,672,252	1,678,864
Feb	456,976	540,101	0	Dec	592,242	689,112	3,210,457	3,232,191
2nd Qtr	953,423	1,281,472	0	2nd Qtr	1,804,240	2,367,582	6,139,700	6,175,665
Mar	369,991	416,011	0	Jan	528,661	935,239	3,264,356	3,284,460
Apr	623,207	662,745	630	Feb	1,413,559	1,589,598	2,394,906	2,418,051
May	1,212,047	1,240,983	0	Mar	261,745	443,882	2,336,953	2,366,047
3rd Qtr	2,205,245	2,319,739	630	3rd Qtr	2,203,965	2,968,719	7,996,215	8,068,558
June	1,765,143	1,774,942	0	Apr	385,235	616,253	3,574,782	3,591,060
July	2,994,897	3,082,335	797	May	1,088,551	1,276,845	3,795,409	3,822,076
Aug	1,116,694	1,139,076	0					
4th Qtr	5,876,734	5,996,353	797	4th Qtr	1,473,786	1,893,098	7,370,191	7,413,136
TOTAL	9,898,160	10,581,783	2,856	TOTAL	6,245,291	8,989,747	27,238,686	27,486,071
1986/87				1986/87				
Sept	311,213	332,783	6,329	June	1,296,495	1,501,548	5,325,376	5,345,316
Oct	66,792	107,949	0	July	15,140	223,046	1,841,943	1,868,602
Nov	333,201	353,750	33	Aug	19,469	210,558	1,537,423	1,559,704
				Sept	75,927	307,474	846,095	879,869
1st Qtr	711,206	794,482	6,362	1st Qtr	1,407,031	2,242,626	9,550,832	9,653,491
Dec	66,353	131,009	0	Oct	31,578	207,980	1,262,426	1,292,827
Jan REV.	85,979	134,935	0	Nov	926,059	1,195,914	2,695,161	2,742,153
Feb	14,207	52,622	86	Dec	173,536	310,750	1,241,736	1,261,139
2nd Qtr	166,539	318,566	86	2nd Qtr	1,131,173	1,712,644	5,199,323	5,896,119
Mar	29,812	63,602	0	Jan	392,962	681,307	3,981,067	4,020,146
Apr	400,056	428,391	0	Feb	625,953	772,737	3,994,932	4,027,553
May	19,009	30,652	0	Mar	1,808,103	1,888,079	2,277,619	2,300,061
3rd Qtr	448,877	522,645	0	3rd Qtr	2,827,018	3,342,123	10,253,618	10,347,760
June	326,401	339,131	0	Apr	508,133	591,606	3,401,071	3,434,844
				May	792,379	849,842	3,951,545	3,988,454
				4th Qtr	1,300,512	1,441,448	7,352,616	7,423,298
				TOTAL	6,665,734	8,738,841	32,356,389	33,320,668
				1987/88				
				June	683,655	895,760	3,730,421	3,760,272

Corn includes grain only (yellow dent corn, other), seed, and cornmeal. Sorghum is grain only. Barley includes grain only (barley for malting, other), pearl barley, malted and malted. Oats include grain (hulled or unhulled, hull oats fit and unfit for human consumption, and oatmeal fit for human consumption).

Source: Bureau of the Census, U.S. Department of Commerce.



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A new ERS report on commercial-size farms which specialize in corn production has recently been released. "The Financial Performance of Specialized Dairy Farms" (AIB 529) examines the average returns, costs, and financial conditions of the 130,000 corn farms that reported at least \$40,000 in total production value, of which at least 50 percent was derived from the production of corn not fed to livestock. These specialized corn farms account for 50 percent of all U.S. corn available for sale as reported in the 1985 FCRS. Size and regional comparisons are also made in the upcoming report. For more information, call Mary Ahearn at (202) 786-1807.

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